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PHOTO GUIDE FOR APPRAISING DOWNED WOODY FUELS IN MONTANA FORESTS:

Lodgepole Pine, and
Engelmann Spruce - Subalpine Fir
Cover Types



William C. Fischer

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scL/stk

DEC 13 1981
NATIONAL FOREST SERVICE
MONTANA

INTERMOUNTAIN FOREST AND RANGE EXPERIMENT STATION
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
OGDEN, UTAH 84401

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RESEARCH SUMMARY

Two series of color photographs show different levels of downed woody material resulting from natural processes in two forest cover types in Montana. Each photo is supplemented by inventory data describing the size, weight, volume, and condition of the debris pictured. A subjective evaluation of potential fire behavior under an average bad fire weather situation is given.

Instructions are provided for using the photos to describe fuels and to evaluate potential fire hazard.

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EXCHANGE Rec'd

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¹Subsequently assigned to Institute of Northern Forestry, Fairbanks, Alaska.

CONTENTS

	Page
PURPOSE OF PHOTO SERIES	1
USING THE PHOTOS	1
Arranging the Photos	1
The Data Sheet	2
Describing the Fuel Complex	2
Rating Fire Potential	3
PHOTO GUIDE DEVELOPMENT	5
PUBLICATIONS CITED	6
SERIES 1 - LODGEPOLE PINE SAF COVER TYPE 218	9
SERIES 2 - ENGELMANN SPRUCE - SUBALPINE FIR SAF COVER TYPE 206	43

PURPOSE OF PHOTO SERIES

This photo guide contains information that can be used to appraise the dead woody debris on the forest floor of lodgepole pine and Engelmann spruce - subalpine fir forest cover types (SAF 1954) in Montana. The guide is primarily for natural (nonslash) fuels, although some photos include old logging and thinning slash. Natural fuels result from wind, snow, and mechanical breakage, natural pruning of lower branches, needle fall, windthrow, blowdown, and the falling of trees killed by insects, disease, fire, and competition for light and moisture. The old logging and thinning slash shown has either been treated or left untreated. It can therefore be considered a part of the natural fuel complex.

This guide is designed to help forest managers describe the deadwood on the forest floor, to estimate the amount of such material, and to evaluate its fire hazard. The photos show a variety of fuel situations that exist in lodgepole pine and spruce- fir forests in Montana and surrounding Northern Rocky Mountain areas.

The fuel appraisal obtained from this guide can be used to plan fire management strategies including fire prevention, fuel treatment, prescribed fire, dispatch-

ing for fire suppression, and establishing criteria for unscheduled prescribed fires.

The photos provide a relatively quick and inexpensive aid for accomplishing fuel appraisal over large forested areas. Although the precision of this procedure is unknown, it is expected to be intermediate: less than standard fuel inventory but greater than designating a stylized fuel model such as used in the National Fire Danger Rating System.

Perhaps the strongest feature of this series is the fire potential rating with each photo. Alternative methods for evaluating fire potential are generally unavailable, and those methods that do exist are outdated or not well suited for rating nonuniform fuel situations.

USING THE PHOTOS

Arranging the Photos

The photos and accompanying data sheets are presented in two series:

Series 1—Lodgepole pine cover type.

Series 2—Engelmann spruce - subalpine fir cover type.

Within each series, the photos are arranged according to total fuel loading. The first photo in each series shows the lightest fuel load, the last shows the heaviest load.

The Data Sheet

The fuel complex shown in each photo is described on an accompanying data sheet in terms of the following characteristics:

1. Forest cover type.
2. Montana habitat type.
3. Stand and site data: age of overstory dominants, average slope, aspect, elevation, and fire ecology group.
4. Down and dead woody fuel loadings by size class.
5. Other fuel data: average duff depth and for fuels 3 inches (7.62 cm) in diameter and greater, the average diameter, the percent rotten, and the volume of sound material.
6. National Fire Danger Rating System fuel model.
7. Stylized fuel model.

Symbols used for forest vegetation are the standard symbols for Northern Region plants (USDA Forest Service 1969). The symbols represent the first two

letters of the generic name and the first two letters of the specific name of the plant species (such as PICO - *Pinus contorta*).

Describing the Fuel Complex

Several important fuel characteristics can be seen in each photo: (1) The amount of fuel in the different diameter classes, (2) the general condition of the fuel (sound versus rotten), (3) the distribution of the fuel over the area, and (4) the depth of the fuel (each black and white section on the plot marker is 1 foot [0.3048 m]). Consequently, the manager can use the photos to estimate values for these characteristics of woody debris on the forest floor.

To use the photos to describe downed woody fuels, simply inspect the fuel complex and then select the photo that most nearly compares with what is on the ground. Then use the information on the data sheet to describe the observed fuel complex.

Perhaps no one photo adequately represents the actual situation. If this is the case, select two photos that bracket the observed fuel complex and then interpolate between the values on the data sheets accompanying the selected photos.

Rather than trying to select one photo or a pair of photos that best reflects the entire fuel complex, the user could describe each of the above-mentioned fuel characteristics separately. This could be done by using the following procedure suggested by Maxwell and Ward (1976a, 1976b), as adapted by Koski and Fischer (1979):

1. Observe each of the characteristics of the fuel complex on the ground.
2. For each characteristic, select the photo that most nearly matches, or photos that bracket the observed situations.
3. For each characteristic, obtain a value from the data sheet accompanying the selected photo (or interpolate a value if a pair of photos was selected).

The above procedure should only be used when a single photo or a pair of photos can't be used to describe the observed situation. For most fuel situations, any improvement in estimates obtained by rating each fuel characteristic separately is not justified by the increased time it takes to get them.

These procedures refer to use of the photos at a specific point. This can be a representative point and the results applied to an entire forest stand. This method is satisfactory when the fuels are uniform throughout the stand. It will be difficult to select a representative point in many stands. The photos can

be used to sample stands when nonuniform fuels preclude the selection of a representative point. The procedure is as follows:

1. Establish 10 or more points, spread systematically through the stand.
2. At each point evaluate the fuels within clear eyesight.
3. Summarize the results as a simple average for the stand or express the results as the percent of area in several classes (for example, 40 percent of stand >10 tons/acre, 60 percent of stand <30 tons/acre).

Rating Fire Potential

The data sheet for each photo contains adjective ratings for five different expressions of fire behavior: rate of spread, intensity, torching, crowning, and resistance to control. An overall fire behavior potential rating is also given for the fuel complex pictured. The ratings are for an "average bad" fire weather situation defined as: 80° -90° F temperature (27° -32° C), 15-20 percent relative humidity, 10-15 mi/h windspeed (16-24 km/h), and 4 weeks since a significant rain (0.10 inch [0.25 cm] or greater).

This approach to estimating fire potential is not without precedent in the Northern Rocky Mountains. In many ways it is a refinement of the time-tested

concept of fuel rating introduced more than 40 years ago by L. G. Hornby (1936).

The adjective ratings nil, low, medium, high, and extreme are defined as follows for each of the different expressions of fire behavior:

Rate of Spread

Nil—fire cannot sustain itself.

Low—spread will be slow and discontinuous.

Medium—uniform spread possible, but can be stopped by aggressive ground attack with hand tools.

High—spread will be rapid; indirect attack on fire front may be required for control.

Extreme—spread will be explosive; little chance of control until weather changes.

Intensity

Nil—fire cannot sustain itself.

Low—cool fire; very little hot spotting required for control.

Medium—fire will burn hot in places; aggressive hot spotting with hand tools likely to be successful.

High—too hot for sustained direct attack with hand tools; aerial tankers or large ground tanker required to cool fire front.

Extreme—direct ground attack not possible; air or ground tanker attack likely to be ineffective.

Torching

Nil—no chance of torching.

Low—occasional tree may torch-out.

Medium—pole-sized understory trees likely to torch-out.

High—most of understory and occasional overstory trees likely to torch-out.

Extreme—entire stand likely to torch-out.

Crowning

Nil—sustained spread in crowns will not occur.

Low—sustained spread in crown unlikely.

Medium—some crowning likely but will not be continuous.

High—sustained crowning likely.

Extreme—sustained crowning will occur.

Resistance to Control

Nil—no physical impediments to line building and holding.

Low—occasional tough spots but not enough to cause serious line building and holding problems.

Medium—hand line construction will be difficult and slow, but dozers can operate without serious problems.

High—slow work for dozers, very difficult for hand crews; hand line holding will be difficult.

Extreme—neither dozers nor hand crews can effectively build and hold line.

Overall

Nil—fire will not sustain itself.

Low—fire can be easily controlled by several smokechasers with hand tools.

Medium—aggressive crew-sized (6-10 persons) initial attack required for successful control.

High—aggressive crew-sized (25 persons) initial attack with substantial reinforcement required for successful control; 10 percent chance that initial control action will fail.

Extreme—90 percent chance that initial control action will fail.

Procedures for using the photos to estimate fire potential are the same as those given for describing the fuel complex.

PHOTO GUIDE DEVELOPMENT

This photo guide was developed using the technique explained by Fischer (1981), which involved the following steps:

1. The fuel complexes photographed were selected to represent the range of fuel situations observed to exist for the cover type in Montana.
2. Sample plots are generally laid out and photographed in accordance with procedures suggested by USDA Forest Service (1975).
3. Fuels were sampled and described using fuel inventory and computational techniques developed by Brown (1974).
4. Habitat types are according to Pfister and others (1977). Cover types are according to SAF (1954).
5. Fire potential ratings are based on subjective evaluation by experienced fire managers using the adjective ratings and definitions in the preceding section of this guide.
6. National Fire Danger Rating fuel model assignment was by the author using definitions provided by Deeming and others (1977). Stylized fuel model assignment was by the author using definitions provided by Albini (1976).
7. The fire ecology group assignment was by the author using the definitions provided by Davis and others (1980).
8. Stand and site data were obtained using standard forestry field techniques.

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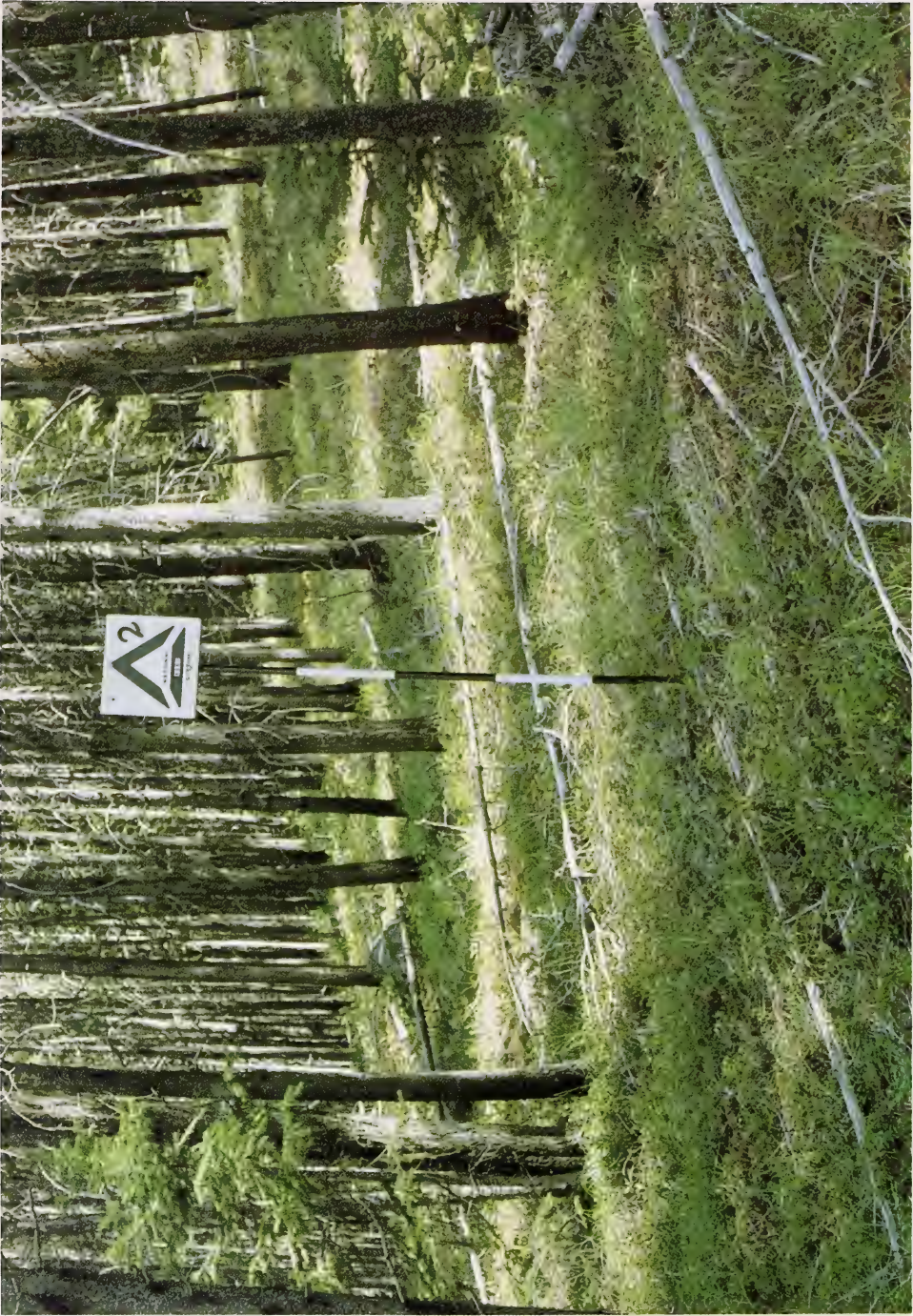
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SERIES 1

LODGEPOLE PINE

SAF COVER TYPE 218



DATA SHEET

Stand No. 2

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine
MONTANA HABITAT TYPE: NO. 640 Subalpine fir/dwarf huckleberry (ABLA/VACA)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 1.3 in 3.30 cm		Based on an average bad day: 85.90 ° temp., 15.20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.5 0.11	Average diameter, 3 + fuels: 4.6 in		Rate of Spread: medium	
0.25-1	0.7 0.16	11.68 cm		Intensity: Low	
1-3	0.9 0.20	Percent rotten, 3 + fuels: 52 %		Torching: Low	
Subtotal 0-3	2.1 0.47	Volume of sound 3 + fuels: 53 ft ³ /ac 3.7 m ³ /ha		Crowning: Low	
3-6	0.8 0.18	STAND AND SITE DATA		Resistance to control: Low	
6-10	0 0	Age of overstory dominants: PICO 80 yrs		Overall Fire Potential LOW	
10-20	0.6 0.13	PSME 65 yrs		STAND LOCATION	
20+	0 0	Average slope: 40 %		National Forest: Lolo	
SUBTOTAL 3+	1.4 0.31	Aspect: south		Ranger District: Missoula	
TOTAL	3.5 0.78	Elevation: 4350 ft 1326 m		Drainage: E. Fk. Lolo Cr.	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	Photo taken: 9/15/76			
H	8	By: S. Cox			
		Remarks: Fire Ecology Group Seven			



Stand No. 26A

FOREST COVER TYPE: SAF NO.	218	Lodgepole pine
MONTANA HABITAT TYPE: NO.	283	Douglas-fir/blue huckleberry-beargrass phase (PSME/VAGL-XETE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth: _____ in _____ cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.2	0.04	Average diameter, 3+ fuels: _____ in _____ cm		Rate of Spread: _____ medium	
0.25-1	0.4	0.09	Percent rotten, 3+ fuels: _____ %		Intensity: _____ low	
1-3	0.7	0.16	Volume of sound 3+ fuels: _____ ft ³ /ac _____ m ³ /ha		Torching: _____ nil	
Subtotal 0-3	1.3	0.29			Crowning: _____ nil	
3-6	1.9	0.43			Resistance to control: _____ low	
6-10	0.8	0.18			Overall Fire Potential LOW	
10-20	0	0			STAND LOCATION	
20+	0	0			National Forest: _____ Helena	
SUBTOTAL 3+	2.7	0.61			Ranger District: _____ Lincoln	
TOTAL	4.0	0.90			Drainage: _____ Keep Cool Cr.	
NFDRS FUEL MODEL			STYLIZED FUEL MODEL		Photo taken: _____ 7/28/78	
H			8		By: _____ W. C. Fischer	



DATA SHEET

Stand No. 1

FOREST COVER TYPE: SAF NO. 218

Lodgepole pine

MONTANA HABITAT TYPE: NO. 640

Subalpine fir/dwarf huckleberry (ABLA/VACA)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac kg/m ²	Average duff depth:	1.4 in 3.56 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.6 0.13	Average diameter, 3 + fuels:	4.2 in	Rate of Spread:	medium
0.25-1	0.9 0.20		10.67 cm	Intensity:	Low
1-3	3.8 0.85	Percent rotten, 3 + fuels:	12 %	Torching:	Low
		Volume of sound 3 + fuels:	131 ft ³ /ac 9.2 m ³ /ha	Crowning:	Low
Subtotal 0-3	5.3 1.18			Resistance to control:	Low
3-6	1.4 0.31	STAND AND SITE DATA		Overall Fire Potential	LOW
6-10	0.4 0.08	Age of overstory dominants:	80 yrs	STAND LOCATION	
10-20	0 0	PICO		National Forest:	Lolo
20+	0 0	PSME	65 yrs	Ranger District:	Missoula
SUBTOTAL 3+	1.8 0.39			Drainage:	E. Fk. Lolo Cr.
TOTAL	7.1 1.57	Average slope:	30 %		
		Aspect:	south		
		Elevation:	4350 ft 1326 m		
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	Remarks:			
H	8	Fire Ecology Group Seven			
		Photo taken:	9/15/76		
		By:	S. Cox		



DATA SHEET

Stand No. 35A

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine

MONTANA HABITAT TYPE: NO. 720 Subalpine fir/blue huckleberry (ABLA/VAGL)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth:	2.4 in 6.10 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3 0.07	Average diameter, 3 + fuels:	3.8 in	Rate of Spread:	medium
0.25-1	1.2 0.27			Intensity:	low
1-3	5.1 1.14	Percent rotten, 3 + fuels:	16 %	Torching:	low
		Volume of sound 3 + fuels:	360 ft ³ /ac 25.2 m ³ /ha	Crowning:	low
Subtotal 0-3	6.6 1.48	Resistance to control: low			
3-6	4.3 0.96	Overall Fire Potential LOW			
6-10	1.1 0.25	STAND LOCATION			
10-20	0 0	National Forest: Lewis & Clark			
20+	0 0	Ranger District: White Sulphur Springs			
SUBTOTAL 3+	5.4 1.21	Drainage: Fourmile Cr.			
TOTAL	12.0 2.69	Photo taken: 8/10/78			
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	By: W. C. Fischer			
H/G	8/10	Remarks: Fire Ecology Group Seven			



DATA SHEET

FOREST COVER TYPE: SAF NO. 218 Stand No. 82
MONTANA HABITAT TYPE: NO. 661 Lodgepole pine
Subalpine fir/twinflower-twinflower (ABLA/LIBO-LIBO)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	1.5 in 3.81 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3	0.07	Average diameter, 3+ fuels:	6.1 in 15.49 cm	Rate of Spread:	Low
0.25-1	0.3	0.07	Percent rotten, 3+ fuels:	89 %	Intensity:	Low
1-3	1.5	0.34	Volume of sound 3+ fuels:	90 ft ³ /ac 6.3 m ³ /ha	Torching:	Low
Subtotal 0.3	2.1	0.48	Crowning:			
3-6	1.7	0.38	Resistance to control:			
6-10	7.3	1.64	Overall Fire Potential			
10-20	1.6	0.36	LOW			
20+	0	0	STAND LOCATION			
SUBTOTAL 3+	10.6	2.38	National Forest: LoLo			
TOTAL	12.7	2.86	Ranger District: Missoula			
NFDRS FUEL MODEL			Drainage: Howard Cr.			
STYLIZED FUEL MODEL			Photo taken: 8/22/77			
G			By: W. C. Fischer			
10						



DATA SHEET

Stand No. 85

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine
MONTANA HABITAT TYPE: NO. 283 Douglas-fir/blue huckleberry-beargrass phase (PSME/VAGL-XETE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T ₁ ac	Weight Kg/m ²	Average duff depth: 2.2 in 5.59 cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.5	0.11	Average diameter, 3+fuels: 8.9 in 22.61 cm		Rate of Spread: low Intensity: medium	
0.25-1	1.9	0.43	Percent rotten, 3+fuels: 98%		Torching: medium	
1-3	4.3	0.96	Volume of sound 3+fuels: 11 ft ³ /ac 0.8 m ³ /ha		Crowning: low Resistance to control: medium	
Subtotal 0-3	6.7	1.50	Overall Fire Potential MEDIUM			
3-6	0.2	0.04	STAND AND SITE DATA			
6-10	1.6	0.36	Age of overstory dominants: PICO 70 yrs PSME 70 yrs			
10-20	4.2	0.94	National Forest: Lolo Ranger District: Missoula Drainage: Howard Cr.			
20+	0	0	Photo taken: 8/22/77 By: W. C. Fischer			
SUBTOTAL 3+	6.0	1.34	Average slope: 9 Aspect: northwest Elevation: 5300 ft 1615 m			
TOTAL	12.7	2.84	Remarks: Fire Ecology Group Six			
NFDRS FUEL MODEL		STYLIZED FUEL MODEL				
G		10				



DATA SHEET

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine Stand No. 25A

MONTANA HABITAT TYPE: NO. 283 Douglas-fir/blue huckleberry-beargrass phase (PSME/VAGL-XETE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight kg/m ²	Average duff depth: <u>1.0</u> in <u>2.54</u> cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.2	0.04	Average diameter, 3+fuels: <u>3.7</u> in		Rate of Spread: <u>low</u>	
0.25-1	0.8	0.18			Intensity: <u>low</u>	
1-3	3.7	0.83	Percent rotten, 3+fuels: <u>10</u> %		Torching: <u>nil</u>	
			Volume of sound 3+fuels: <u>580</u> ft ³ /ac		Crowning: <u>nil</u>	
Subtotal 0-3	4.7	1.05	<u>40.6</u> m ³ /ha		Resistance to control: <u>low</u>	
STAND AND SITE DATA			STAND LOCATION			
Age of overstory dominants:			National Forest: <u>Helena</u>			
PICO <u>120</u> yrs			Ranger District: <u>Lincoln</u>			
PSME <u>95</u> yrs			Drainage: <u>Keep Cool Cr.</u>			
SUBTOTAL 3+ <u>8.1</u> <u>1.81</u>						
TOTAL <u>12.8</u> <u>2.86</u>						
NFDPS FUEL MODEL		STYLIZED FUEL MODEL	Photo taken: <u>7/28/78</u>			
H		8	By: <u>W. C. Fischer</u>			
Remarks: <u>Fire Ecology Group Six</u>						



DATA SHEET

FOREST COVER TYPE: SAF NO.
MONTANA HABITAT TYPE: NO.

218
940

Lodgepole pine
Lodgepole pine/grouse whortleberry (PICO/VASC)

Stand No.
34A

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING		
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth: 1.9 in 4.83 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0-0.25	0.4	0.09	Average diameter, 3 + fuels: 3.5 in		Rate of Spread: medium		
0.25-1	1.9	0.43	Percent rotten, 3 + fuels: 8.89 cm		Intensity: medium		
1-3	8.5	1.91	Volume of sound 3 + fuels: 15 %		Torching: low		
Subtotal 0-3	10.8	2.43	157 ft ³ /ac		Crowning: low		
3-6	2.1	0.47	11.0 m ² /ha		Resistance to control: Low		
6-10	0.2	0.04			Overall Fire Potential MEDIUM		
10-20	0	0			STAND LOCATION		
20 +	0	0			National Forest: Lewis & Clark		
SUBTOTAL 3 +	2.3	0.51			Ranger District: White Sulphur Springs		
TOTAL	13.1	2.94			Drainage: Fourmile Cr.		
MFDRS FUEL MODEL	STYLIZED FUEL MODEL		Age of overstory dominants: PICO 85 yrs				
G	10		Average slope: 7 %				
			Aspect: northwest				
			Elevation: 6170 ft 1881 m				
			Remarks: Fire Ecology Group Seven				
				Photo taken: 8/10/78			
				By: W. C. Fischer			



DATA SHEET

Stand No. 45A

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine
MONTANA HABITAT TYPE: NO. 250 Douglas-fir/dwarf huckleberry (PSME/VACA)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth: 1.5 in 3.81 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.2	0.04	Average diameter, 3+fuels: 6.5 in		Rate of Spread: medium	
0.25-1	0.8	0.18	16.51 cm		Intensity: medium	
1-3	1.7	0.38	Percent rotten, 3+fuels: 99 %		Torching: medium	
Subtotal 0-3	2.7	0.60	Volume of sound 3+fuels: 8 ft ³ /ac 0.6 m ³ /ha		Crowning: Low	
3-6	1.2	0.27	Resistance to control: medium			
6-10	6.5	1.46	Overall Fire Potential MEDIUM			
10-20	2.8	0.63	STAND LOCATION			
20+	0	0	National Forest: Deerlodge			
SUBTOTAL 3+	10.5	2.36	Ranger District: Phillipsburg			
TOTAL	13.2	2.96	Drainage: Henderson Cr.			
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	Photo taken: 9/25/78				
H/G	8/10	By: W. C. Fischer				
		Remarks: Fire Ecology Groups Six (Westside) and Seven (Eastside)				



DATA SHEET

Stand No. 47A

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine

MONTANA HABITAT TYPE: NO. 250 Douglas-fir/dwarf huckleberry (PSME/VACA)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING		
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	2.5 in 6.35 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0-0.25	0.1	0.02	Average diameter, 3 + fuels:	5.3 in	Rate of Spread:	Low	
0.25-1	1.0	0.22		13.46 cm	Intensity:	Low	
1-3	3.3	0.74	Percent rotten, 3 + fuels:	90 %	Torching:	Low	
			Volume of sound 3 + fuels:	102 ft ³ /ac	Crowning:	Low	
Subtotal 0-3	4.4	0.98		7.1 m ³ /ha	Resistance to control:	Low	
3-6	3.3	0.74	STAND AND SITE DATA				
6-10	5.4	1.21	Age of overstory dominants:				
10-20	4.0	0.90	PSME	200+ yrs	STAND LOCATION		
20+	0	0	PICO	180 yrs	National Forest:	Deerlodge	
SUBTOTAL 3+	12.7	2.85	Ranger District:				Philipsburg
TOTAL	17.1	3.83	Drainage:				Henderson Cr.
NFDRS FUEL MODEL			STYLIZED FUEL MODEL				
H/G			8/10				

Photo taken: 9/25/78
By: W. C. Fischer

Remarks: Fire Ecology Group Seven



DATA SHEET

Stand No. 87

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine
MONTANA HABITAT TYPE: NO. 662 Subalpine fir/twinflower-beargrass phase (ABLA/VAGL-XETE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth:	2.1 in 5.33 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mph wind, 4 weeks since rain	
0-0.25	0.4 0.09	Average diameter, 3+fuels:	5.4 in	Rate of Spread: Low	
0.25-1	2.1 0.47		13.72 cm	Intensity: medium	
1-3	2.6 0.58	Percent rotten, 3+fuels:	43 %	Torching: Low	
Subtotal 0-3	5.1 1.14	Volume of sound 3+fuels:	617 ft ³ /ac 43.2 m ³ /ha	Crowning: Low	
3-6	4.7 1.05	Resistance to control: medium			
6-10	7.4 1.66	Overall Fire Potential MEDIUM			
10-20	1.3 0.29	STAND LOCATION			
20+	0 0	National Forest: Lolo			
SUBTOTAL 3+	13.4 3.00	Ranger District: Missoula			
TOTAL	18.5 4.14	Drainage: N. Fk. Howard Cr.			
NFDRS FUEL MODEL		Photo taken: 8/29/77			
STYLIZED FUEL MODEL		By: W. C. Fischer			
K		11			



DATA SHEET

Stand No. 83

FOREST COVER TYPE: SAF NO. 218, Lodgepole pine
MONTANA HABITAT TYPE: NO. 292, Douglas-fir/twinflower-pinegrass phase (PSME/LIBO-CARU)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 1.7 in 4.32 cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 milh wind, 4 weeks since rain	
0-0.25	0.5 0.11	Average diameter, 3 + fuels: 4.3 in		Rate of Spread: medium	
0.25-1	1.7 0.38	10.92 cm		Intensity: medium	
1-3	1.9 0.43	Percent rotten, 3 + fuels: 18 %		Torching: Low	
Subtotal 0-3	4.1 0.92	Volume of sound 3 + fuels: 988 ft ³ /ac 69.1 m ³ /ha		Crowning: Low	
3-6	10.0 2.24			Resistance to control: medium	
6-10	3.0 0.67			Overall Fire Potential MEDIUM	
10-20	2.1 0.47				
20 +	0 0				
SUBTOTAL 3 +	15.1 3.38				
TOTAL	19.2 4.30				
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	Age of overstory dominants: PICO 50 yrs LAOC 50 yrs		STAND LOCATION	
		Average slope: 12 % Aspect: southeast Elevation: 4950 ft 1509 m		National Forest: Lolo	
		Remarks: old thinning slash Fire Ecology Group Six		Ranger District: Missoula	
				Drainage: Howard Cr.	
				Photo taken: 8/22/77	
				By: W. C. Fischer	

G 10



DATA SHEET

Stand No. 92

FOREST COVER TYPE: SAF NO. 218

Lodgepole pine

MONTANA HABITAT TYPE: NO. 691

Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 1.5 in 3.81 cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.6 0.13	Average diameter, 3 + fuels: 4.2 in		Rate of Spread: medium	
0.25-1	1.9 0.43	Percent rotten, 3 + fuels: 42 %		Intensity: medium	
1-3	6.2 1.39	Volume of sound 3 + fuels: 498 ft ³ /ac		Torching: low	
Subtotal 0-3	8.7 1.95	34.9 m ³ /ha		Crowning: low	
				Resistance to control: medium	
				Overall Fire Potential MEDIUM	
NFDRS FUEL MODEL		STAND AND SITE DATA		STAND LOCATION	
SUBTOTAL 3+ 10.8 2.43		Age of overstory dominants: LAOC 280 yrs		National Forest: Lolo	
TOTAL 19.5 4.38		PICO 55 yrs		Ranger District: Missoula	
		Average slope: 30 %		Drainage: Howard Cr.	
		Aspect: northwest			
		Elevation: 5270 ft 1606 m			
		Remarks: old thinning slash			
		Fire Ecology Group Eight			
K/G		11/10		Photo taken: 8/29/77	
				By: W. C. Fischer	



DATA SHEET

FOREST COVER TYPE: SAF NO.
MONTANA HABITAT TYPE: NO.

218
691

Lodgepole pine
Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

Stand No.
53

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3	0.07	1.9	in	Rate of Spread: low	
0.25-1	1.4	0.31	4.83	cm	Intensity: medium	
1-3	4.5	1.01	4.4	in	Torching: low	
			11.18	cm	Crowning: low	
				%	Resistance to control: low	
Subtotal 0-3	6.2	1.39	Percent rotten, 3 + fuels: 18		Overall Fire Potential LOW	
			Volume of sound 3 + fuels: 932 ft ³ /ac			
			65.2 m ³ /ha			
STAND AND SITE DATA			STAND LOCATION			
Age of overstory dominants: 128 yrs			National Forest: Lolo			
PICO			Ranger District: Missoula			
PSME 125 yrs			Drainage: Gilbert Cr.			
ABLA 100 yrs						
Average slope: 60 %			Photo taken: 7/6/77			
Aspect: northwest			By: W. C. Fischer			
Elevation: 5870 ft 1789 m						
Remarks:						
Fire Ecology Group Eight						

G
10



DATA SHEET

Stand No. 41

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine
MONTANA HABITAT TYPE: NO. 670 Subalpine fir/menziesia (ABLA/MEPE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight kg/m ²	T _{lac}	Average duff depth: 1.4 in 3.56 cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.2	0.04	Average diameter, 3+ fuels: 4.7 in		Rate of Spread: Low	
0.25-1	1.1	0.25	11.94 cm		Intensity: Low	
1-3	2.9	0.65	Percent rotten, 3+ fuels: 54 %		Torching: Low	
Subtotal 0-3	4.2	0.94	Volume of sound 3+ fuels: 652 ft ³ /ac 45.6 m ³ /ha		Crowning: Low	
					Resistance to control: Low	
					Overall Fire Potential LOW	
			STAND AND SITE DATA		STAND LOCATION	
			Age of overstory dominants: PSME 103 yrs		National Forest: Lolo	
			PICO 86 yrs		Ranger District: Missoula	
					Drainage: Gilbert Cr.	
SUBTOTAL 3+			17.7 3.97			
TOTAL			21.9 4.91			
NFDRS FUEL MODEL			STYLIZED FUEL MODEL			
G			10		Photo taken: 6/23/77 By: W. C. Fischer	



DATA SHEET

FOREST COVER TYPE: SAF NO. 218 Stand No. 49A Lodgepole pine

MONTANA HABITAT TYPE: NO. 640 Subalpine fir/dwarf huckleberry (ABLA/VACA)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac	Average duff depth: 2.3 in 5.84 cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3	Average diameter, 3+fuels: 3.6 in		Rate of Spread: low	
0.25-1	1.4			Intensity: medium	
1-3	8.1	Percent rotten, 3+fuels: 24%		Torching: low	
		Volume of sound 3+fuels: 780 ft ³ /ac 54.6 m ³ /ha		Crowning: medium	
Subtotal 0-3	9.8			Resistance to control: medium	
3-6	11.8			Overall Fire Potential MEDIUM	
6-10	1.0				
10-20	0				
20+	0				
SUBTOTAL 3+	12.8				
TOTAL	22.6				
STYLIZED FUEL MODEL		STAND AND SITE DATA		STAND LOCATION	
		Age of overstory dominants: PICO 162 yrs		National Forest: Deerlodge	
		Average slope: 1% Aspect: northwest Elevation: 6560 ft 1999 m		Ranger District: Philipsburg	
		Remarks: Fire Ecology Group Seven		Drainage: Sand Basin Cr.	
NFDRS FUEL MODEL				Photo taken: 10/5/78	
G		10		By: W. C. Fischer	



DATA SHEET

Stand No. 98

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine

MONTANA HABITAT TYPE: NO. 690 Subalpine fir/beargrass (ABLA/XETE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 2.0 in 5.08 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3 0.07	Average diameter, 3+fuels: 4.2 in		Rate of Spread: Low	
0.25-1	1.2 0.27	10.67 cm		Intensity: medium	
1-3	5.3 1.19	Percent rotten, 3+fuels: 23 %		Torching: Low	
Subtotal 0-3	6.8 1.53	Volume of sound 3+fuels: 1059 ft ³ /ac 74.1 m ³ /ha		Crowning: Low	
3-6	10.8 2.42			Resistance to control: medium	
6-10	6.3 1.41			Overall Fire Potential MEDIUM	
10-20	0 0				
20+	0 0				
SUBTOTAL 3+	17.1 3.83				
TOTAL	23.9 5.36				
NFDRS FUEL MODEL		STAND AND SITE DATA		STAND LOCATION	
STYLIZED FUEL MODEL		Age of overstory dominants: 145 yrs PICO		National Forest: Lolo	
		PSME 130 yrs		Ranger District: Missoula	
		PICEA 120 yrs		Drainage: W. Fk. Tyle Cr.	
		Average slope: 8 %			
		Aspect: northwest			
		Elevation: 6360 ft 1939 m		Photo taken: 6/13/78	
		Remarks: Fire Ecology Group Seven		By: W. C. Fischer	
G		10			



DATA SHEET

Stand No. 61

FOREST COVER TYPE: SAF NO.

218

Lodgepole pine

MONTANA HABITAT TYPE: NO.

691

Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac	Average duff depth:	2.8 in 7.11 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.5	Average diameter, 3+ fuels:	5.5 in	Rate of Spread:	medium
0.25-1	1.7		13.97 cm	Intensity:	medium
1-3	1.3	Percent rotten, 3+ fuels:	40 %	Torching:	low
		Volume of sound 3+ fuels:	998 ft ³ /ac 69.8 m ³ /ha	Crowning:	low
Subtotal 0-3	3.5			Resistance to control:	medium
3-6	5.2	Overall Fire Potential MEDIUM			
6-10	11.5	STAND AND SITE DATA			
10-20	4.1	Age of overstory dominants:	137 yrs	STAND LOCATION	
20+	0	LAOC		National Forest:	Lolo
		PSME	127 yrs	Ranger District:	Missoula
SUBTOTAL 3+	20.8	PICO	123 yrs	Drainage:	Rattlesnake Cr.
TOTAL	24.8				
STYLIZED FUEL MODEL		Average slope: 30 %			
		Aspect: southwest			
		Elevation: 5120 ft 1561 m			
NFDRS FUEL MODEL		Remarks:			
G		Fire Ecology Group Eight			
10					
		Photo taken: 7/13/77			
		By: W. C. Fischer			



DATA SHEET

Stand No. 60

FOREST COVER TYPE: SAF NO. 218

Lodgepole pine

MONTANA HABITAT TYPE: NO. 624

Subalpine fir/queencup beadlily-beargrass phase (ABLA/CLUN-XETE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth:	2.1 in 5.33 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3 0.07	Average diameter, 3 + fuels:	5.4 in	Rate of Spread:	low
0.25-1	0.8 0.18		13.72 cm	Intensity:	medium
1-3	0.4 0.09	Percent rotten, 3 + fuels:	28 %	Torching:	medium
		Volume of sound 3 + fuels:	1516 ft ³ /ac 106.1 m ³ /ha	Crowning:	low
Subtotal 0-3	1.5 0.34			Resistance to control:	medium
3-6	7.5 1.68	STAND AND SITE DATA		Overall Fire Potential	MEDIUM
6-10	12.3 2.76	Age of overstory dominants:		STAND LOCATION	
10-20	6.5 1.46	LAOC	432 yrs	National Forest:	Lolo
20+	0 0	PICO	147 yrs	Ranger District:	Missoula
SUBTOTAL 3+	26.3 5.90	PICEA	100 yrs	Drainage:	Rattlesnake Cr.
TOTAL	27.8 6.24	Average slope: 14 %			
		Aspect: southeast			
		Elevation: 5140 ft 1567 m		Photo taken: 7/13/77	
		Remarks:		By: W. C. Fischer	
		Fire Ecology Group Nine			
NFDRS FUEL MODEL		STYLIZED FUEL MODEL			
G		10			



DATA SHEET

Stand No. 6

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine

MONTANA HABITAT TYPE: NO. 283 Douglas fir/blue huckleberry-beargrass phase (PSME/VAGL-XE1E)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 2.1 in 5.33 cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	1.2 0.27	Average diameter, 3 + fuels: 9.0 in		Rate of Spread: high	
0.25-1	3.1 0.69	22.86 cm		Intensity: high	
1-3	3.1 0.69	Percent rotten, 3 + fuels: 99 %		Torching: extreme	
Subtotal 0-3	7.4 1.65	Volume of sound 3 + fuels: 9 ft ³ /ac 0.6 m ³ /ha		Crowning: extreme	
3-6	0.3 0.07	STAND AND SITE DATA		Resistance to control: high	
6-10	7.3 1.64	Age of overstory dominants: LAOC 77 yrs		Overall Fire Potential EXTREME	
10-20	13.3 2.98	PICO 77 yrs		STAND LOCATION	
20+	0 0	PSME 70 yrs		National Forest: Lolo	
SUBTOTAL 3+	20.9 4.69	Average slope: south 30 %		Ranger District: Missoula	
TOTAL	28.3 6.34	Aspect: 5320 ft 1622 m		Drainage: Clondburst Cr.	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	Photo taken: 9/16/76			
G	10	By: S. Cox			
		Remarks: Fire Ecology Group Six			



DATA SHEET

FOREST COVER TYPE: SAF NO.
MONTANA HABITAT TYPE: NO.

218
283

Lodgepole pine
Douglas fir/blue huckleberry-beargrass phase (PSME/VAGL-XETE)

Stand No.
55

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac	Average duff depth: 1.2 in 3.05 cm		Based on an average bad day: 85-90° temp., 15-20% RH., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3	Average diameter, 3 + fuels: 5.0 in		Rate of Spread: medium	
0.25-1	1.4	12.70 cm		Intensity: medium	
1-3	2.1	Percent rotten, 3 + fuels: 13 %		Torching: low	
		Volume of sound 3 + fuels: 1858 ft ³ /ac		Crowning: low	
Subtotal 0-3	3.8	130.0 m ³ /ha		Resistance to control: low	
		STAND AND SITE DATA		Overall Fire Potential MEDIUM	
		Age of overstory dominants: 170 yrs		STAND LOCATION	
		PICO PSME 140 yrs		National Forest: Lolo	
				Ranger District: Missoula	
				Drainage: Gilbert Cr.	
SUBTOTAL 3 +		26.4		Photo taken: 7/6/77	
TOTAL		30.2		By: W. C. Fischer	
NFDRS FUEL MODEL		STYLIZED FUEL MODEL			
G		10			



DATA SHEET

Stand No. 48A

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine
MONTANA HABITAT TYPE: NO. 250 Douglas-fir/dwarf huckleberry (PSME/VACA)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 2.2 in 5.59 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.2 0.04	Average diameter, 3 + fuels: 6.4 in		Rate of Spread: high	
0.25-1	1.0 0.22	16.26 cm		Intensity: medium	
1-3	1.2 0.27	Percent rotten, 3 + fuels: 66 %		Torching: high	
Subtotal 0-3	2.4 0.53	Volume of sound 3 + fuels: 790 ft ³ /ac 55.3 m ³ /ha		Crowning: medium	
				Resistance to control: medium	
				Overall Fire Potential MEDIUM	
		STAND AND SITE DATA		STAND LOCATION	
		Age of overstory dominants: 130 yrs		National Forest: Deerlodge	
		PICO PSME 114 yrs		Ranger District: Philipsburg	
				Drainage: Henderson Cr.	
		Average slope: 20 %		Photo taken: 9/25/78	
		Aspect: east		By: W. C. Fischer	
		Elevation: 6230 ft 1899 m			
		Remarks:			
		Fire Ecology Group Six (westside) and Seven (eastside)			
NFDRS FUEL MODEL		STYLIZED FUEL MODEL			
SUBTOTAL 3+ 29.3 6.57					
TOTAL 31.7 7.10					
G		10			



DATA SHEET

Stand No. 11

FOREST COVER TYPE: SAF NO. 218

Lodgepole pine

MONTANA HABITAT TYPE: NO. 691

Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 1.2 in 3.05 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 milh wind, 4 weeks since rain	
0-0.25	0.5 0.11	Average diameter, 3+fuels: 5.4 in		Rate of Spread: Low	
0.25-1	1.5 0.34	13.72 cm		Intensity: medium	
1-3	5.0 1.12	Percent rotten, 3+fuels: 34 %		Torching: Low	
Subtotal 0-3	7.0 1.57	Volume of sound 3+fuels: 1328 ft ³ /ac 92.9 m ³ /ha		Crowning: Low	
		STAND AND SITE DATA		Resistance to control: Low	
3-6				Overall Fire Potential LOW	
6-10					
10-20		Age of overstory dominants: PICO 60 yrs		STAND LOCATION	
20+				National Forest: Lolo	
SUBTOTAL 3+				Ranger District: Missoula	
TOTAL				Drainage: Cloudburst Cr.	
		Average slope: 10 %			
		Aspect: north			
		Elevation: 5760 ft 1756 m			
		Remarks: small amount of pole and post cutting slash present		Photo taken: 9/21/76	
		Fire Ecology Group Eight		By: W. C. Fischer	
NFDRS FUEL MODEL		STYLIZED FUEL MODEL			
G		10			



DATA SHEET

FOREST COVER TYPE: SAF NO. 218 **Stand No.** 46A **Lodgepole pine**
MONTANA HABITAT TYPE: NO. 250 **Douglas-fir/dwarf huckleberry (PSME/VACA)**

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	2.5 in 6.35 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.2	0.04	Average diameter, 3 + fuels:	5.1 in 12.95 cm	Rate of Spread: medium	
0.25-1	0.7	0.16	Percent rotten, 3 + fuels:	77 %	Intensity: medium	
1-3	1.2	0.27	Volume of sound 3 + fuels:	551 ft ³ /ac 38.6 m ³ /ha	Torching: medium	
Subtotal 0-3	2.1	0.47			Crowning: medium	
3-6	10.7	2.40			Resistance to control: medium	
6-10	17.0	3.81			Overall Fire Potential MEDIUM	
10-20	2.5	0.56				
20 +	0	0				
SUBTOTAL 3 +	30.2	6.77				
TOTAL	32.3	7.24				
NFDRS FUEL MODEL			STAND AND SITE DATA		STAND LOCATION	
			Age of overstory dominants: PICO 55 yrs		National Forest: Deerlodge	
			Average slope: 5 %		Ranger District: Philipsburg	
			Aspect: northeast		Drainage: Henderson Cr.	
			Elevation: 5880 ft 1792 m			
Remarks:			Photo taken: 9/25/78			
Fire Ecology Group Six (westside) and Seven (eastside)			By: W. C. Fischer			

G 10



DATA SHEET

Stand No. 27

FOREST COVER TYPE: SAF NO. 218, Lodgepole pine
MONTANA HABITAT TYPE: NO. 292, Douglas-fir/twinflower-pinegrass phase (PSME/LIBO-CARU)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	2.3 in 5.84 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3	0.07	Average diameter, 3 + fuels:	6.3 in	Rate of Spread: medium	
0.25-1	1.7	0.38	Percent rotten, 3 + fuels:	16.00 cm	Intensity: medium	
1-3	3.2	0.72	Volume of sound 3 + fuels:	93 %	Torching: medium	
Subtotal 0-3	5.2	1.17		152 ft ³ /ac 10.6 m ³ /ha	Crowning: medium Resistance to control: medium	
3-6	5.0	1.12	Overall Fire Potential MEDIUM			
6-10	14.3	3.21	STAND LOCATION			
10-20	8.8	1.97	National Forest: Lolo			
20 +	0	0	Ranger District: Missoula			
SUBTOTAL 3 +	28.1	6.30	Drainage: W. Fk. Swartz Cr.			
TOTAL	33.3	7.47	Photo taken: 6/20/77			
NEDRS FUEL MODEL	STYLIZED FUEL MODEL		By: W. C. Fischer			
G	10					



DATA SHEET

FOREST COVER TYPE: SAF NO.

218

Stand No.

81

MONTANA HABITAT TYPE: NO.

470

Lodgepole pine

Spurce/twinflower (PICEA/LIBO)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 1.6 in 4.06 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3 0.07	Average diameter, 3 + fuels: 7.7 in		Rate of Spread: Low	
0.25-1	0.8 0.18	19.56 cm		Intensity: Low	
1-3	2.4 0.54	Percent rotten, 3 + fuels: 31 %		Torching: Low	
		Volume of sound 3 + fuels: 1722 ft ³ /ac 120.5 m ³ /ha		Crowning: Low	
Subtotal 0-3	3.5 0.79			Resistance to control: Low	
3-6	2.8 0.63	STAND AND SITE DATA		Overall Fire Potential LOW	
6-10	6.3 1.41	Age of overstory dominants:		STAND LOCATION	
10-20	22.1 4.95	PICO 50 yrs		National Forest: Lolo	
20+	0 0			Ranger District: Missoula	
SUBTOTAL 3+	31.2 6.99			Drainage: Howard Cr.	
TOTAL	34.7 7.78	Average slope: 23 %			
		Aspect: northwest		Photo taken: 8/22/77	
		Elevation: 4400 ft 1341 m		By: W. C. Fischer	
		Remarks:			
		Fire Ecology Group Seven			
NFDRS FUEL MODEL		STYLIZED FUEL MODEL			
G		10			

SERIES 2

ENGELMANN SPRUCE - SUBALPINE FIR

SAF COVER TYPE 206



DATA SHEET

Stand No. 45

FOREST COVER TYPE: SAF NO.	206	Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO.	691	Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight Kg/m ²	T/ac	Average duff depth:	in	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.07	0.3	Average diameter, 3 + fuels:	in	Rate of Spread:	Low
0.25-1	0.13	0.6	3.0		Intensity:	Low
1-3	0.07	0.3	7.62	cm	Torching:	Low
			Percent rotten, 3 + fuels:	100 %	Crowning:	Low
			Volume of sound 3 + fuels:	0 ft ³ /ac	Resistance to control:	Low
Subtotal 0-3	0.27	1.2		0 m ³ /ha	Overall Fire Potential	LOW
3-6	0.02	0.1	STAND AND SITE DATA Age of overstory dominants: 86 yrs PSME PICO 57 yrs ABLA 55 yrs Average slope: 40 % Aspect: southeast Elevation: 6280 ft 1914 m Remarks: Fire Ecology Group Eight			
6-10	0	0				
10-20	0	0				
20 +	0	0				
SUBTOTAL 3 +	0.02	0.1				
TOTAL	0.29	1.3	STAND LOCATION National Forest: Lolo Ranger District: Missoula Drainage: Gilbert Cr.			
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	Photo taken: 6/24/77 By: W. C. Fischer				
H	8					



DATA SHEET

FOREST COVER TYPE: SAF NO.

206

Stand No.

1A

MONTANA HABITAT TYPE: NO.

691

Engelmann spruce - subalpine fir

Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	2.9 7.37	in cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain
0-0.25	0.4	0.09	Average diameter, 3 + fuels:	3.3	in	
0.25-1	1.9	0.43		8.38	cm	
1-3	3.3	0.74	Percent rotten, 3 + fuels:	79	%	
Subtotal 0-3	5.6	1.26	Volume of sound 3 + fuels:	1.4	ft ³ /ac	
				1.0	m ³ /ha	
			STAND AND SITE DATA			
3-6			Age of overstory dominants:			
6-10			PIMO			
10-20			PICO			
20+			ABLA			
SUBTOTAL 3+			PSME			
TOTAL			Average slope: 6			
			Aspect: southwest			
			Elevation: 5480 ft			
			Remarks: Fire Ecology Group Eight			
			National Forest: Kootenai			
			Ranger District: Libby			
			Drainage: Hennesey Cr.			
			Photo taken: 6/26/78			
			By: W. C. Fischer			

STAND LOCATION

Overall Fire Potential MEDIUM

H8



DATA SHEET

FOREST COVER TYPE: SAF NO.

206

Stand No.

40

MONTANA HABITAT TYPE: NO.

670

Engelmann spruce - subalpine fir

Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 2.5 in 6.35 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.2 0.04	Average diameter, 3 + fuels: 5.3 in		Rate of Spread: Low	
0.25-1	1.8 0.40	13.46 cm		Intensity: Low	
1-3	1.6 0.36	Percent rotten, 3 + fuels: 81 %		Torching: Low	
		Volume of sound 3 + fuels: 45 ft ³ /ac 3.2 m ³ /ha		Crowning: Low	
Subtotal 0-3	3.6 0.80			Resistance to control: Low	
3-6	1.4 0.31	STAND AND SITE DATA		Overall Fire Potential LOW	
6-10	1.5 0.34				
10-20	0 0	Age of overstory dominants: 68 yrs		STAND LOCATION	
20+	0 0	PICO		National Forest: Lolo	
		PSME		Ranger District: Missoula	
SUBTOTAL 3+	2.9 0.65			Drainage: Gilbert Cr.	
TOTAL	6.5 1.45	Average slope: 40 %			
		Aspect: northwest			
		Elevation: 6130 ft 1868 m			
NFDRS FUEL MODEL		Remarks:		Photo taken: 6/23/77	
		Fire Ecology Group Nine		By: W. C. Fischer	
H	8				



DATA SHEET

FOREST COVER TYPE: SAF NO.

206

Stand No.

39

MONTANA HABITAT TYPE: NO.

670

Engelmann spruce - subalpine fir

Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	1.2 3.05	in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain
0-0.25	0.1	0.02	Average diameter, 3 + fuels:	4.5	in	
0.25-1	0.4	0.09		11.43	cm	
1-3	1.4	0.09	Percent rotten, 3 + fuels:	42	%	
Subtotal 0-3	0.9	0.20	Volume of sound 3 + fuels:	292	ft ³ /ac	
3-6	3.3	0.74		20.4	m ³ /ha	Rate of Spread: Low
6-10	3.0	0.67				Intensity: Low
10-20	0	0				Torching: Low
20+	0	0				Crowning: Low
SUBTOTAL 3+	6.3	1.41				Resistance to control: Low
TOTAL	7.2	1.61				Overall Fire Potential LOW
STYLIZED FUEL MODEL			STAND AND SITE DATA			
NEDRS FUEL MODEL	Age of overstory dominants:					
	PICO 130 yrs					
	ABLA 110 yrs					
	PIAL 105 yrs					
	Average slope: 40 %					
	Aspect: northwest					
	Elevation: 6135 ft 1870 m					
	Remarks:					
	Fire Ecology Group Nine					
H	8					

National Forest: Lolo

Ranger District: Missoula

Drainage: Gilbert Cr.

Photo taken: 6/23/77

By: W. C. Fischer



DATA SHEET

FOREST COVER TYPE: SAF NO.

206

Stand No.

35

MONTANA HABITAT TYPE: NO.

670

Engelmann spruce - subalpine fir

Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	0.9 2.29	in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain
0-0.25	0.2	0.04	Average diameter, 3+fuels:	3.7	in	
0.25-1	1.0	0.22		9.40	cm	
1-3	3.3	0.74	Percent rotten, 3+fuels:	22	%	
Subtotal 0-3	4.5	1.00	Volume of sound 3+fuels:	282	ft ³ /ac	
				19.7	m ³ /ha	
			STAND AND SITE DATA			
3-6	4.5	1.01	Age of overstory dominants: 110 yrs			
6-10	0	0				
10-20	0	0				
20+	0	0				
SUBTOTAL 3+						
TOTAL						
STYLIZED FUEL MODEL			STAND LOCATION			
NFDRS FUEL MODEL			National Forest: Lolo			
			Ranger District: Missoula			
			Drainage: Gilbert Cr.			
			Photo taken: 6/23/77			
			By: W. C. Fischer			
H			8			



DATA SHEET

Stand No. 2A

FOREST COVER TYPE: SAF NO. 206
Engelmann spruce - Subalpine fir

MONTANA HABITAT TYPE: NO. 691
Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.6	0.13		2.2 in	Rate of Spread:	medium
0.25-1	1.5	0.34		5.59 cm	Intensity:	medium
1-3	2.9	0.65	Average diameter, 3 + fuels:	4.8 in	Torching:	low
				12.19 cm	Crowning:	medium
			Percent rotten, 3 + fuels:	57 %	Resistance to control:	medium
Subtotal 0-3	5.0	1.12	Volume of sound 3 + fuels:	150 ft ³ /ac	Overall Fire Potential	MEDIUM
				10.5 m ³ /ha		
3-6	2.3	0.52	STAND AND SITE DATA			
6-10	2.0	0.45	Age of overstory dominants: 78 yrs			
10-20	0	0	Aspect: PIMO			
20+	0	0	PSME 77 yrs			
			PICO 76 yrs			
			ABGR 70 yrs			
SUBTOTAL 3+	4.3	0.97	Average slope: 16 %			
TOTAL	9.3	2.09	Aspect: southwest			
			Elevation: 5100 ft 1554 m			
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Remarks:			
			Fire Ecology Group Eight			
H/G	8/10					



DATA SHEET

Stand No. 26

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO. 621 Subalpine fir/queencup beadlily-queencup beadlily phase (ABLA/CLUN-CLUN)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/lac	Weight Kg/m ²	Average duff depth: 3.3 in 8.38 cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.8	0.18	Average diameter, 3 + fuels: 4.2 in		Rate of Spread: low	
0.25-1	2.0	0.45	10.67 cm		Intensity: medium	
1-3	3.3	0.74	Percent rotten, 3 + fuels: 30 %		Torching: low	
Subtotal 0-3	6.1	1.37	Volume of sound 3 + fuels: 281 ft ³ /ac 19.7 m ³ /ha		Crowning: low	
3-6	3.0	0.67	STAND AND SITE DATA		Resistance to control: low	
6-10	1.1	0.25	Age of overstory dominants: 100 yrs		Overall Fire Potential LOW	
10-20	1.0	0.22	LAOC 93 yrs		STAND LOCATION	
20+	0	0	PICEA 87 yrs		National Forest: Lolo	
SUBTOTAL 3+	5.1	1.14	ABLA 80 yrs		Ranger District: Ninemile	
TOTAL	11.2	2.51	Average slope: 20 %		Drainage: Butler Cr.	
NFDRS FUEL MODEL		STYLIZED FUEL MODEL	Aspect: south		Photo taken: 9/24/76	
H/G		8/10	Elevation: 3450 ft 1052 m		By: W. C. Fischer	
			Remarks: stream-side			
			Fire Ecology Group Nine			



DATA SHEET

FOREST COVER TYPE: SAF NO. 206 **Stand No.** 24A
 Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO. 692 **Subalpine fir/beargrass-grouse whortleberry phase**
 (ABLA/XETE-VASC)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight Kg/m ²	Average duff depth:	0.8 in 2.03 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mph wind, 4 weeks since rain	
0-0.25	0.3	Average diameter, 3 + fuels:	3.7 in	Rate of Spread:	medium
0.25-1	1.0		9.40 cm	Intensity:	medium
1-3	2.5	Percent rotten, 3 + fuels:	8 %	Torching:	medium
		Volume of sound 3 + fuels:	654 ft ³ /ac 45.8 m ³ /ha	Crowning:	low
Subtotal 0-3	3.8			Resistance to control:	low
3-6	7.7	Overall Fire Potential MEDIUM			
6-10	1.3	STAND AND SITE DATA			
10-20	0	Age of overstory dominants:			
20 +	0	PSME	160 yrs	STAND LOCATION	
		PICO	140 yrs	National Forest:	Helena
		ABLA	93 yrs	Ranger District:	Lincoln
SUBTOTAL 3 +	9.0			Drainage:	Keep Cool Cr.
TOTAL	12.8	Average slope: 10 %			
STYLIZED FUEL MODEL		Aspect: southeast			
NFDRS FUEL MODEL		Elevation: 5020 ft 1530 m			
H		Remarks: Fire Ecology Group Seven			
8		By: W. C. Fischer			
		Photo taken: 7/28/78			



DATA SHEET

Stand No.
44

FOREST COVER TYPE: SAF NO.
206

Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO.
670

Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/lac Kg/m ²	Average duff depth: 1.6 in 4.06 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.6 0.13	Average diameter, 3+fuels: 3.8 in		Rate of Spread: high	
0.25-1	2.6 0.58	9.65 cm		Intensity: high	
1-3	7.6 1.70	Percent rotten, 3+fuels: 30 %		Torching: high	
Subtotal 0-3	10.8 2.41	Volume of sound 3+fuels: 372 ft ³ /ac 26.0 m ³ /ha		Crowning: medium	
3-6	5.5 1.23	STAND AND SITE DATA		Resistance to control: medium	
6-10	1.1 0.25	Age of overstory dominants:		Overall Fire Potential HIGH	
10-20	0 0	PICO 90 yrs		STAND LOCATION	
20+	0 0	PSME 70 yrs		National Forest: Lolo	
SUBTOTAL 3+	6.6 1.48			Ranger District: Missoula	
TOTAL	17.4 3.89			Drainage: Gilbert Cr.	
NFDRS FUEL MODEL		STYLIZED FUEL MODEL		Photo taken: 6/24/77	
G		10		By: W. C. Fischer	



DATA SHEET

Stand No. 37

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO. 670 Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 2.0 in 5.08 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3 0.07	Average diameter, 3+fuels: 4.7 in 11.94 cm		Rate of Spread: low medium	
0.25-1	1.9 0.43	Percent rotten, 3+fuels: 33 %		Intensity: medium	
1-3	4.1 0.92	Volume of sound 3+fuels: 656 ft ³ /ac 45.9 m ³ /ha		Torching: medium	
Subtotal 0-3	6.3 1.42			Crowning: medium	
3-6	6.4 1.43			Resistance to control: medium	
6-10	4.6 1.03			Overall Fire Potential MEDIUM	
10-20	1.3 0.29				
20+	0 0				
SUBTOTAL 3+	12.3 2.75				
TOTAL	18.6 4.17				
NFDRS FUEL MODEL		STYLIZED FUEL MODEL		STAND LOCATION	
G		10		National Forest: Lolo	
				Ranger District: Missoula	
				Drainage: Gilbert Cr.	
				Photo taken: 6/23/77	
				By: W. C. Fischer	



DATA SHEET

FOREST COVER TYPE: SAF NO. 206 Stand No. 21
 MONTANA HABITAT TYPE: NO. 624 Engelmann spruce - subalpine fir
 Subalpine fir/queencup beadlily-beargrass (ABLA/CIUN-XETE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/lac Kg/m ²	Average duff depth: 1.5 in 3.81 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mph wind, 4 weeks since rain	
0-0.25	0.7 0.16	Average diameter, 3+fuels: 5.8 in 14.73 cm		Rate of Spread: Low	
0.25-1	1.3 0.29	Percent rotten, 3+fuels: 1 %		Intensity: Low	
1-3	3.1 0.69	Volume of sound 3+fuels: 1198 ft ³ /ac 83.8 m ³ /ha		Torching: Low	
Subtotal 0-3	5.1 1.14			Crowning: Low	
3-6	4.0 0.90			Resistance to control: Low	
6-10	2.7 0.61			Overall Fire Potential LOW	
10-20	8.4 1.88				
20+	0 0				
SUBTOTAL 3+	15.1 3.39				
TOTAL	20.2 4.53				
NFDRS FUEL MODEL		STYLIZED FUEL MODEL		STAND LOCATION	
G		10		National Forest: LoLo	
				Ranger District: Ninemile	
				Drainage: Bear Cr.	
				Photo taken: 9/23/76	
				By: W. C. Fischer	
				Remarks: Fire Ecology Group Nine	



DATA SHEET

FOREST COVER TYPE: SAF NO.
MONTANA HABITAT TYPE: NO.

206
670

Stand No.
21A

Engelmann spruce - subalpine fir
Subalpine fir/menziesia (ABLA/MEPE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac	Average duff depth: 2.5 in 6.35 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.2	Average diameter, 3 + fuels: 4.5 in		Rate of Spread: Low	
0.25-1	0.9	11.43 cm		Intensity: Low	
1-3	1.9	Percent rotten, 3 + fuels: 41 %		Torching: nil	
		Volume of sound 3 + fuels: 812 ft ³ /ac 56.8 m ³ /ha		Crowning: nil	
Subtotal 0-3	3.0			Resistance to control: Low	
3-6	9.7			Overall Fire Potential LOW	
6-10	7.5				
10-20	0				
20 +	0				
SUBTOTAL 3 +	17.2				
TOTAL	20.2				
NFDRS FUEL MODEL		STYLIZED FUEL MODEL		STAND LOCATION	
H/C		8/10		National Forest: Helena	
				Ranger District: Lincoln	
				Drainage: Cooper Cr.	
		Average slope: 8 %		Photo taken: 7/21/78	
		Aspect: northwest		By: W. C. Fischer	
		Elevation: 6160 ft 1878 m			
		Remarks: Fire Ecology Group Nine			



DATA SHEET

Stand No. 90

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO. 661 Subalpine fir/twinflower-twinflower phase (ABLA/LIBO-LIBO)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/lac	Weight Kg/m ²	Average duff depth: 2.1 in 5.33 cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.0-25	0.5	0.11	Average diameter, 3+fuels: 5.4 in		Rate of Spread: medium	
0.25-1	2.2	0.49	13.72 cm		Intensity: medium	
1-3	4.3	0.96	Percent rotten, 3+fuels: 1 %		Torching: low	
Subtotal 0-3	7.0	1.56	Volume of sound 3+fuels: 1159 ft ³ /ac 81.1 m ³ /ha		Crowning: nil	
3-6	3.4	0.76			Resistance to control: medium	
6-10	0.4	0.09			Overall Fire Potential MEDIUM	
10-20	4.7	1.05				
20+	6.0	1.35				
SUBTOTAL 3+	14.5	3.25				
TOTAL	21.5	4.81				
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	STAND AND SITE DATA				
C	2	Age of overstory dominants: 120 yrs				
		LAOC PSME PICO 63 yrs 52 yrs				
		Average slope: 52 %				
		Aspect: northeast Elevation: 4040 ft 1231 m				
		Remarks: old partial cut Fire Ecology Group Nine				
		Photo taken: 8/29/77 By: W. C. Fischer				
		National Forest: Lolo Ranger District: Missoula Drainage: Howard Cr.				
		STAND LOCATION				



DATA SHEET

Stand No. 54

FOREST COVER TYPE: SAF NO. 206 Englemann spruce - subalpine fir
MONTANA HABITAT TYPE: NO. 670 Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING		
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth: 2.5 in 6.35 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.7	0.16	Average diameter, 3+fuels: 4.8 in			Rate of Spread: high
0.25-1	2.7	0.61	12.19 cm			Intensity: high
1-3	4.1	0.92	Percent rotten, 3+fuels: 53 %			Torching: medium
Subtotal 0-3	7.5	1.69	Volume of sound 3+fuels: 532 ft ³ /ac 37.2 m ³ /ha			Crowning: low
3-6	6.8	1.52	STAND AND SITE DATA		Resistance to control: medium	
6-10	6.0	1.35	Age of overstory dominants: 295 yrs		Overall Fire Potential HIGH	
10-20	1.5	0.34	PSME		STAND LOCATION	
20+	0	0	PICEA 110 yrs		National Forest: Lolo	
SUBTOTAL 3+	14.3	3.21	PICO 89 yrs		Ranger District: Missoula	
TOTAL	21.8	4.90	Average slope: 50 % Aspect: northwest Elevation: 5900 ft 1798 m		Drainage: Gilbert Cr.	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	Remarks: Fire Ecology Group Nine				Photo taken: 7/6/77
C	10					By: W. C. Fischer



DATA SHEET

Stand No.
36

FOREST COVER TYPE: SAF NO.
206

Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO.
670

Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac	Average duff depth:	2.6 in 6.60 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.4	Average diameter, 3+fuels:	4.7 in 11.94 cm	Rate of Spread:	low
0.25-1	2.0	Percent rotten, 3+fuels:	66 %	Intensity:	medium
1-3	2.9	Volume of sound 3+fuels:	459 ft ³ /ac 32.1 m ³ /ha	Torching:	medium
Subtotal 0-3	5.3			Crowning:	medium
3-6	8.1	STAND AND SITE DATA		Resistance to control:	medium
6-10	8.9	Age of overstory dominants:		Overall Fire Potential MEDIUM	
10-20	0	PIAL	190 yrs	STAND LOCATION	
20+	0	ABLA	130 yrs	National Forest:	Lolo
SUBTOTAL 3+	17.0	Average slope: 30 %		Ranger District:	Missoula
TOTAL	22.3	Aspect: northwest		Drainage:	Gilbert Cr.
		Elevation: 6620 ft 2018 m		Photo taken: 6/23/77	
		Remarks:		By: W. C. Fischer	
		Fire Ecology Group Nine			

G 10



DATA SHEET

Stand No. 22A

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO. 670 Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 1.9 in 4.83 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0-0.25	0.5 0.11	Average diameter, 3+fuels: 5.2 in	Rate of Spread:	Low	
0.25-1	1.8 0.40	13.21 cm	Intensity:	Low	
1-3	2.0 0.45		Torching:	Low	
			Crowning:	Low	
Subtotal 0-3	4.3 0.96		Resistance to control:	Low	
3-6	5.9 1.32		Overall Fire Potential	LOW	
6-10	9.4 2.11		STAND LOCATION		
10-20	2.9 0.65		National Forest:	Helena	
20+	0 0		Ranger District:	Lincoln	
SUBTOTAL 3+	18.2 4.08		Drainage:	Cooper Cr.	
TOTAL	22.5 5.04				
NFDRS FUEL MODEL		STYLIZED FUEL MODEL		Photo taken: 7/21/78	
G		10		By: W. C. Fischer	



DATA SHEET

FOREST COVER TYPE: SAF NO.
206

MONTANA HABITAT TYPE: NO.
670

Stand No.
50

Engelmann spruce - subalpine fir

Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	3.6 in 9.14 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.7	0.16	Average diameter, 3 + fuels:	6.7 in		
0.25-1	2.8	0.63	Percent rotten, 3 + fuels:	17.02 cm		
1-3	1.6	0.36	Volume of sound 3 + fuels:	41 %		
Subtotal 0-3	5.1	1.15		913 ft ³ /ac 63.9 m ³ /ha		
			STAND AND SITE DATA			
3-6	2.0	0.45	Age of overstory dominants: 153 yrs		Overall Fire Potential MEDIUM	
6-10	9.5	2.13	PSME		National Forest: Lolo	
10-20	7.8	1.75	ABLA		Ranger District: Missoula	
20+	0	0			Drainage: Gilbert Cr.	
SUBTOTAL 3+	19.3	4.33				
TOTAL	24.4	5.48	Average slope: 60 %			
		STYLIZED FUEL MODEL	Aspect: northeast			
			Elevation: 5790 ft 1765 m		Photo taken: 6/24/77	
			Remarks:		By: W. C. Fischer	
			Fire Ecology Group Nine			
G		10				



DATA SHEET

FOREST COVER TYPE: SAF NO.

206

Stand No.

58

Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO.

670

Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/lac Kg/m ²	Average duff depth: 1.6 in 4.06 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3 0.07	Average diameter, 3 + fuels: 7.2 in		Rate of Spread: low	
0.25-1	1.2 0.27	18.29 cm		Intensity: medium	
1-3	2.1 0.47	Percent rotten, 3 + fuels: 33 %		Torching: medium	
		Volume of sound 3 + fuels: 1280 ft ³ /ac 89.6 m ³ /ha		Crowning: low	
Subtotal 0-3	3.6 0.81			Resistance to control: medium	
3-6	2.0 0.45	STAND AND SITE DATA		Overall Fire Potential MEDIUM	
6-10	10.8 2.42	Age of overstory dominants: 132 yrs		STAND LOCATION	
10-20	9.0 2.02	ABLA		National Forest: Lolo	
20+	1.9 0.43	PICEA 121 yrs		Ranger District: Missoula	
SUBTOTAL 3+	23.7 5.32	PICO 103 yrs		Drainage: Wrangle Cr.	
TOTAL	27.3 6.13	Average slope: 28 %			
		Aspect: southwest			
		Elevation: 5720 ft 1743 m		Photo taken: 7/13/77	
		Remarks:		By: W. C. Fischer	
		Fire Ecology Group Nine			

G

10



DATA SHEET

FOREST COVER TYPE: SAF NO.
206

MONTANA HABITAT TYPE: NO.
670

Stand No.
19

Engelmann spruce - subalpine fir

Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/lac kg/m ²	Average duff depth: 1.2 in 3.05 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3 0.07	Average diameter, 3+ fuels: 5.1 in		Rate of Spread: medium	
0.25-1	0.9 0.20	Percent rotten, 3+ fuels: 12.95 cm		Intensity: medium	
1-3	2.9 0.65	Volume of sound 3+ fuels: 9 %		Torching: medium	
Subtotal 0-3	4.1 0.92	1731 ft ³ /ac		Crowning: medium	
3-6	7.7 1.73	121.1 m ² /ha		Resistance to control: medium	
6-10	14.6 3.27	STAND AND SITE DATA		Overall Fire Potential MEDIUM	
10-20	1.6 0.36	Age of overstory dominants: 120 yrs		STAND LOCATION	
20+	0 0	ABLA		National Forest: Lolo	
SUBTOTAL 3+	23.9 5.36	PICO 117 yrs		Ranger District: Ninemile	
TOTAL	28.0 6.28	PICEA 100 yrs		Drainage: Bear Cr.	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	Average slope: 10 %		Photo taken: 9/22/76	
G	10	Aspect: northeast		By: W. C. Fischer	
		Elevation: 5750 ft 1753 m			
		Remarks: Fire Ecology Group Nine			



DATA SHEET

FOREST COVER TYPE: SAF NO. 206 **Stand No.** 57
MONTANA HABITAT TYPE: NO. 625 Engelmann spruce - subalpine fir
Subalpine fir/queencup beadlily-menziesia phase (ABLA/CLUN-MEFE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/lac	Weight Kg/m ²	Average duff depth:	4.0 in 10.16 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.2	0.04	Average diameter, 3+fuels:	8.0 in	Rate of Spread:	Low
0.25-1	1.1	0.25			Intensity:	Low
1-3	0.6	0.13	Percent rotten, 3+fuels:	25 %	Torching:	Low
			Volume of sound 3+fuels:	1834 ft ³ /ac 128.3 m ³ /ha	Crowning:	Low
Subtotal 0-3	1.9	0.42			Resistance to control:	Low
3-6	1.7	0.38	Overall Fire Potential LOW			
6-10	11.1	2.49	STAND AND SITE DATA			
10-20	17.8	3.90	Age of overstory dominants:	150 yrs	STAND LOCATION	
20+	0	0	PICEA		National Forest:	Lolo
			PSME	132 yrs	Ranger District:	Missoula
			ABLA	120 yrs	Drainage:	Wrangle Cr.
SUBTOTAL 3+	30.6	6.77				
TOTAL	32.5	7.19	Average slope:	30 %		
			Aspect:	northeast		
			Elevation:	5500 ft 1676 m		
			Remarks:	Fire Ecology Group Nine		
			Photo taken: 7/13/77			
			By: W. C. Fischer			

G 10



DATA SHEET

FOREST COVER TYPE: SAF NO.

206

Stand No.

96

Engelmann spruce - subalpine fir

Subalpine fir/menziesia (ABLA/MEFE)

MONTANA HABITAT TYPE: NO.

670

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth:	2.8 in 7.11 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.7 0.16	Average diameter, 3+fuels:	6.4 in	Rate of Spread:	medium
0.25-1	1.6 0.36		16.26 cm	Intensity:	medium
1-3	1.8 0.40	Percent rotten, 3 + fuels:	54 %	Torching:	medium
		Volume of sound 3 + fuels:	1078 ft ³ /ac 75.4 m ³ /ha	Crowning:	medium
Subtotal 0-3	4.1 0.92			Resistance to control:	medium
3-6	4.4 0.99	Overall Fire Potential MEDIUM			
6-10	17.2 3.86	STAND AND SITE DATA			
10-20	7.8 1.75	Age of overstory dominants: 250 yrs			
20+	0 0	PSME			
		PICO 190 yrs			
		PICEA 143 yrs			
		ABLA 112 yrs			
SUBTOTAL 3+	29.4 6.60	Average slope: 17 %			
TOTAL	33.5 7.52	Aspect: northwest			
		Elevation: 5300 ft 1615 m			
		Remarks:			
		Fire Ecology Group Nine			
NFDRS FUEL MODEL		STYLIZED FUEL MODEL			
G		10			
		National Forest: Lolo			
		Ranger District: Missoula			
		Drainage: Gillispie Cr.			
		Photo taken: 6/13/78			
		By: W. C. Fischer			



DATA SHEET

Stand No. 23A

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO. 691 Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING
Size Class (Inches)	Weight T/ac	Average duff depth: 3.1 in 7.87 cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain Rate of Spread: high Intensity: medium Torching: medium Crowning: medium Resistance to control: high Overall Fire Potential HIGH
0-0.25	0.6	Average diameter, 3+fuels: 4.8 in		
0.25-1	1.9	12.19 cm		
1-3	3.2	Percent rotten, 3+fuels: 23 %		
Subtotal 0-3	5.7	Volume of sound 3+fuels: 1733 ft ³ /ac 121.3 m ³ /ha		
		STAND AND SITE DATA		
3-6		Age of overstory dominants: 150 yrs		STAND LOCATION National Forest: Helena Ranger District: Lincoln Drainage: Cooper Cr.
6-10		ABLA		
10-20		PSME		
20+		PICEA		
SUBTOTAL 3+		PICO		
TOTAL		Average slope: 6 % Aspect: northwest Elevation: 5890 ft 1795 m		Photo taken: 7/21/78 By: W. C. Fischer
		Remarks: Fire Ecology Group Eight		
NFDRS FUEL MODEL		STYLIZED FUEL MODEL		
G		10		



DATA SHEET

FOREST COVER TYPE: SAF NO.
206

Stand No.
46

MONTANA HABITAT TYPE: NO.
670

Engelmann spruce - subalpine fir

Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/lac	Weight Kg/m ²	Average duff depth:		Based on an average bad day:	
0-0.25	0.7	0.16	3.9 in 9.91 cm		85-90° temp., 15-20% R.H., 10-15 mph wind, 4 weeks since rain	
0.25-1	2.3	0.52	Average diameter, 3 + fuels:		Rate of Spread: medium	
1-3	6.0	1.35	7.8 in 19.81 cm		Intensity: medium	
			Percent rotten, 3 + fuels: 84 %		Torching: medium	
			Volume of sound 3 + fuels:		Crowning: medium	
Subtotal 0-3	9.0	2.03	367 ft ³ /ac 25.7 m ³ /ha		Resistance to control: medium	
3-6	2.6	0.58	Overall Fire Potential MEDIUM			
6-10	7.8	1.75	STAND AND SITE DATA			
10-20	18.9	4.24	Age of overstory dominants: 357 yrs			
20+	0	0	PSME			
SUBTOTAL 3+	29.3	6.57	ABLA 65 yrs			
TOTAL	38.3	8.60	PICEA 55 yrs			
NFDRS FUEL MODEL			Average slope: 60 %			
			Aspect: northeast			
			Elevation: 6000 ft 1829 m			
G			Remarks:			
			Fire Ecology Group Nine			
10			National Forest: Lolo			
			Ranger District: Missoula			
			Drainage: Gilbert Cr.			
			Photo taken: 6/24/77			
			By: W. C. Fischer			



DATA SHEET

FOREST COVER TYPE: SAF NO.
MONTANA HABITAT TYPE: NO.

206
661

Stand No.
97

Engelmann spruce - subalpine fir
Subalpine fir/twinflower-twinflower phase (ABLA/LIBO-LIBO)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 3.1 in 7.87 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.9 0.20	Average diameter, 3 + fuels: 5.7 in		Rate of Spread: medium	
0.25-1	1.8 0.40	14.48 cm		Intensity: medium	
1-3	2.8 0.63	Percent rotten, 3 + fuels: 72 %		Torching: low	
		Volume of sound 3 + fuels: 767 ft ³ /ac 53.7 m ³ /ha		Crowning: low	
Subtotal 0-3	5.5 1.23			Resistance to control: medium	
3-6	8.8 1.97			Overall Fire Potential MEDIUM	
6-10	20.4 4.57				
10-20	4.8 1.08				
20 +	0 0				
SUBTOTAL 3 +	34.0 7.62				
TOTAL	39.5 8.85				
NFDRS FUEL MODEL		STAND AND SITE DATA		STAND LOCATION	
STYLIZED FUEL MODEL		Age of overstory dominants: 115 yrs PICO		National Forest: Lolo	
		PICEA 108 yrs		Ranger District: Missoula	
		ABLA 102 yrs		Drainage: Gillispie Cr.	
		Average slope: 3 %			
		Aspect: northwest			
		Elevation: 5300 ft 1615 m		Photo taken: 6/13/78	
		Remarks: Fire Ecology Group Nine		By: W. C. Fischer	

G
10



DATA SHEET

Stand No. 20

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO. 625 Subalpine fir/queencup beadlily-menziesia (ABLA/CLUN-MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac	Average duff depth: 3.4 in 8.64 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.7	Average diameter, 3+fuels: 6.9 in		Rate of Spread: low	
0.25-1	1.6	17.53 cm		Intensity: medium	
1-3	3.5	Percent rotten, 3+fuels: 6 %		Torching: medium	
		Volume of sound 3+fuels: 2556 ft ³ /ac 178.8 m ³ /ha		Crowning: low	
Subtotal 0-3	5.8			Resistance to control: medium	
3-6	4.6			Overall Fire Potential MEDIUM	
6-10	6.0				
10-20	23.5			STAND LOCATION	
20+	0			National Forest: Lolo	
SUBTOTAL 3+	34.1			Ranger District: Ninemile	
TOTAL	39.9			Drainage: Bear Cr.	
		Age of overstory dominants: LAOC 110 yrs			
		PICEA 92 yrs			
		ABLA 60 yrs			
		Average slope: 10 %			
		Aspect: east			
		Elevation: 5370 ft 1637 m		Photo taken: 9/23/76	
		Remarks: Fire Ecology Group Nine		By: W. C. Fischer	
NFDRS FUEL MODEL		STYLIZED FUEL MODEL			
G		10			



DATA SHEET

Stand No. 59

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO. 691 Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/lac Kg/m ²				
0-0.25	0.4 0.09	Average duff depth: 1.3 in 3.30 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.25-1	1.4 0.31	Average diameter, 3 + fuels: 5.6 in 14.22 cm		Rate of Spread: low	
1-3	2.1 0.47	Percent rotten, 3 + fuels: 12 %		Intensity: medium	
		Volume of sound 3 + fuels: 2596 ft ³ /ac 181.6 m ³ /ha		Torching: medium	
Subtotal 0-3	3.9 0.87			Crowning: low	
3-6	9.4 2.11			Resistance to control: high	
6-10	24.7 5.54			Overall Fire Potential MEDIUM	
10-20	2.8 0.63				
20+	0 0				
SUBTOTAL 3+	36.9 8.28				
TOTAL	40.8 9.15				
STYLIZED FUEL MODEL		STAND AND SITE DATA		STAND LOCATION	
		Age of overstory dominants: 120 yrs		National Forest: Lolo	
		ABLA PSME 118 yrs		Ranger District: Missoula	
				Drainage: Wrangle Cr.	
		Average slope: 24 %			
		Aspect: southeast			
		Elevation: 5620 ft 1713 m		Photo taken: 7/13/77	
		Remarks: Fire Ecology Group Eight		By: W. C. Fischer	

G 10



DATA SHEET

Stand No. 44A

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO. 440 Spruce/sweetscented bedstraw (PICEA/GATR)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 4.9 in 12.45 cm		Based on an average bad day: 85-90° temp., 15-20% RH., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.4 0.09	Average diameter, 3+ fuels: 7.5 in 19.05 cm		Rate of Spread: high Intensity: medium Torching: low Crowning: medium Resistance to control: medium	
0.25-1	1.8 0.40	Percent rotten, 3+ fuels: 50 %			
1-3	4.1 0.92	Volume of sound 3+ fuels: 1476 ft ³ /ac 103.3 m ³ /ha			
Subtotal 0-3	6.3 1.41			Overall Fire Potential MEDIUM	
3-6	3.0 0.67	STAND AND SITE DATA		STAND LOCATION	
6-10	5.5 1.23	Age of overstory dominants: 200+ yrs PICEA		National Forest: Lewis & Clark	
10-20	28.7 6.43	PSME		Ranger District: White Sulphur Springs	
20+	0 0			Drainage: Miller Gulch	
SUBTOTAL 3+	37.2 8.33	Average slope: 7 % Aspect: northwest Elevation: 6270 ft 1911 m		Photo taken: 8/15/78	
TOTAL	43.5 9.74	Remarks: Fire Ecology Group Nine		By: W. C. Fischer	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL				
G	10				



DATA SHEET

FOREST COVER TYPE: SAF NO.
MONTANA HABITAT TYPE: NO.

206
670

Stand No.
93

Engelmann spruce - subalpine fir
Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/lac	Weight Kg/m ²	Average duff depth:	2.3	in
0-0.25	0.7	0.16	Average diameter, 3+fuels:	7.7	in
0.25-1	1.5	0.34	Percent rotten, 3+fuels:	42	%
1-3	2.3	0.52	Volume of sound 3+fuels:	1885	ft ³ /ac
Subtotal 0-3	4.5	1.02		131.9	m ³ /ha
3-6	3.8	0.85	STAND AND SITE DATA		
6-10	14.3	3.21	Age of overstory dominants:		
10-20	22.7	5.09	PSME 177 yrs		
20+	0	0	PICO 130 yrs		
SUBTOTAL 3+		40.8	PICEA 110 yrs		
TOTAL		45.3	Average slope: 19 %		
NFDRS FUEL MODEL		STYLIZED FUEL MODEL	Aspect: northwest		
G		10	Elevation: 5000 ft 1524 m		
			Remarks:		
			Fire Ecology Group Nine		
			National Forest: LoLo		
			Ranger District: Missoula		
			Drainage: Gillispie Cr.		
			Overall Fire Potential LOW		
			Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
			Rate of Spread: Low		
			Intensity: Low		
			Torching: Low		
			Crowning: Low		
			Resistance to control: Low		
			Photo taken: 6/13/78		
			By: W. C. Fischer		



DATA SHEET

Stand No. 47

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO. 670 Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	T/ac	Weight Kg/m ²	Average duff depth: 2.6 in 6.60 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mih wind, 4 weeks since rain	
0-0.25	0.8	0.18	Average diameter, 3+ fuels: 7.0 in 17.78 cm	Rate of Spread: high	
0.25-1	2.6	0.58	Percent rotten, 3+ fuels: 90 %	Intensity: high	
1-3	6.8	1.52	Volume of sound 3+ fuels: 301 ft ³ /ac 21.1 m ³ /ha	Torching: medium	
Subtotal 0-3	10.2	2.28		Crowning: medium	
3-6	4.6	1.03		Resistance to control: medium	
6-10	4.3	0.96		Overall Fire Potential HIGH	
10-20	27.6	6.19			
20+	0	0			
SUBTOTAL 3+	36.5	8.18			
TOTAL	46.7	10.46			
NFDRS FUEL MODEL		STYLIZED FUEL MODEL		STAND LOCATION	
G		10		National Forest: Lolo	
				Ranger District: Missoula	
				Drainage: Gilbert Cr.	
				Photo taken: 6/24/77	
				By: W. C. Fischer	

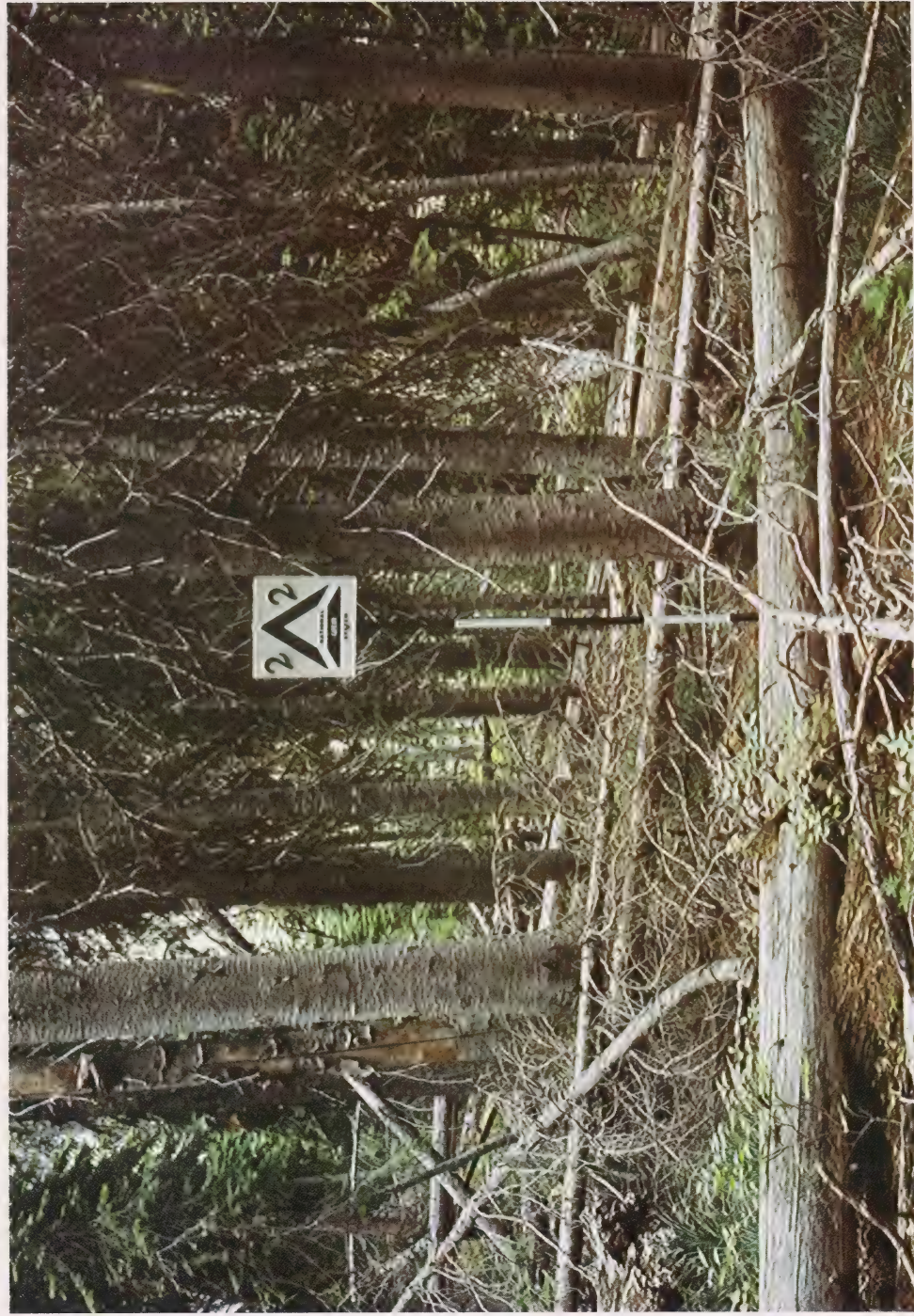


DATA SHEET

Stand No. 4

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO. 670 Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	Weight T/ac	Average duff depth: 3.2 in 8.18 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.7	Average diameter, 3+fuels: 5.5 in		Rate of Spread: medium	
0.25-1	2.3	13.97 cm		Intensity: medium	
1-3	1.8	Percent rotten, 3+fuels: 33 %		Torching: low	
		Volume of sound 3+fuels: 2319 ft ³ /ac		Crowning: low	
Subtotal 0-3	4.8	162.3 m ³ /ha		Resistance to control: medium	
		STAND AND SITE DATA		Overall Fire Potential MEDIUM	
		Age of overstory dominants: PICEA 150 yrs		STAND LOCATION	
		LAOC 130 yrs		National Forest: Lolo	
		ABLA 110 yrs		Ranger District: Missoula	
				Drainage: Lost Park Cr.	
SUBTOTAL 3+ 43.1		Average slope: 20 %			
TOTAL 47.9		Aspect: west			
		Elevation: 4700 ft 1433 m		Photo taken: 9/15/76	
		Remarks: old partial cut		By: W. C. Fischer	
		Fire Ecology Group Nine			
NFDRS FUEL MODEL		STYLIZED FUEL MODEL			
G		10			



DATA SHEET

Stand No. 22

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO. 691 Subalpine fir/beargrass-blue huckleberry (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/lac Kg/m ²	Average duff depth: 1.7 in 4.32 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.6 0.13	Average diameter, 3 + fuels: 7.1 in		Rate of Spread: medium	
0.25-1	1.7 0.38	18.03 cm		Intensity: high	
1-3	2.4 0.54	Percent rotten, 3 + fuels: 57 %		Torching: high	
Subtotal 0-3	4.7 1.05	Volume of sound 3 + fuels: 1477 ft ³ /ac 103.4 m ³ /ha		Crowning: medium	
3-6	4.1 0.92	STAND AND SITE DATA		Resistance to control: high	
6-10	25.6 5.74	Age of overstory dominants: 174 yrs		Overall Fire Potential HIGH	
10-20	13.6 3.05	ABLA		STAND LOCATION	
20 +	0 0			National Forest: Lolo	
SUBTOTAL 3 +	43.3 9.71			Ranger District: Ninemile	
TOTAL	48.0 10.76			Drainage: Sixmile Cr.	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	Photo taken: 9/23/76			
G	10	By: W. C. Fischer			



DATA SHEET

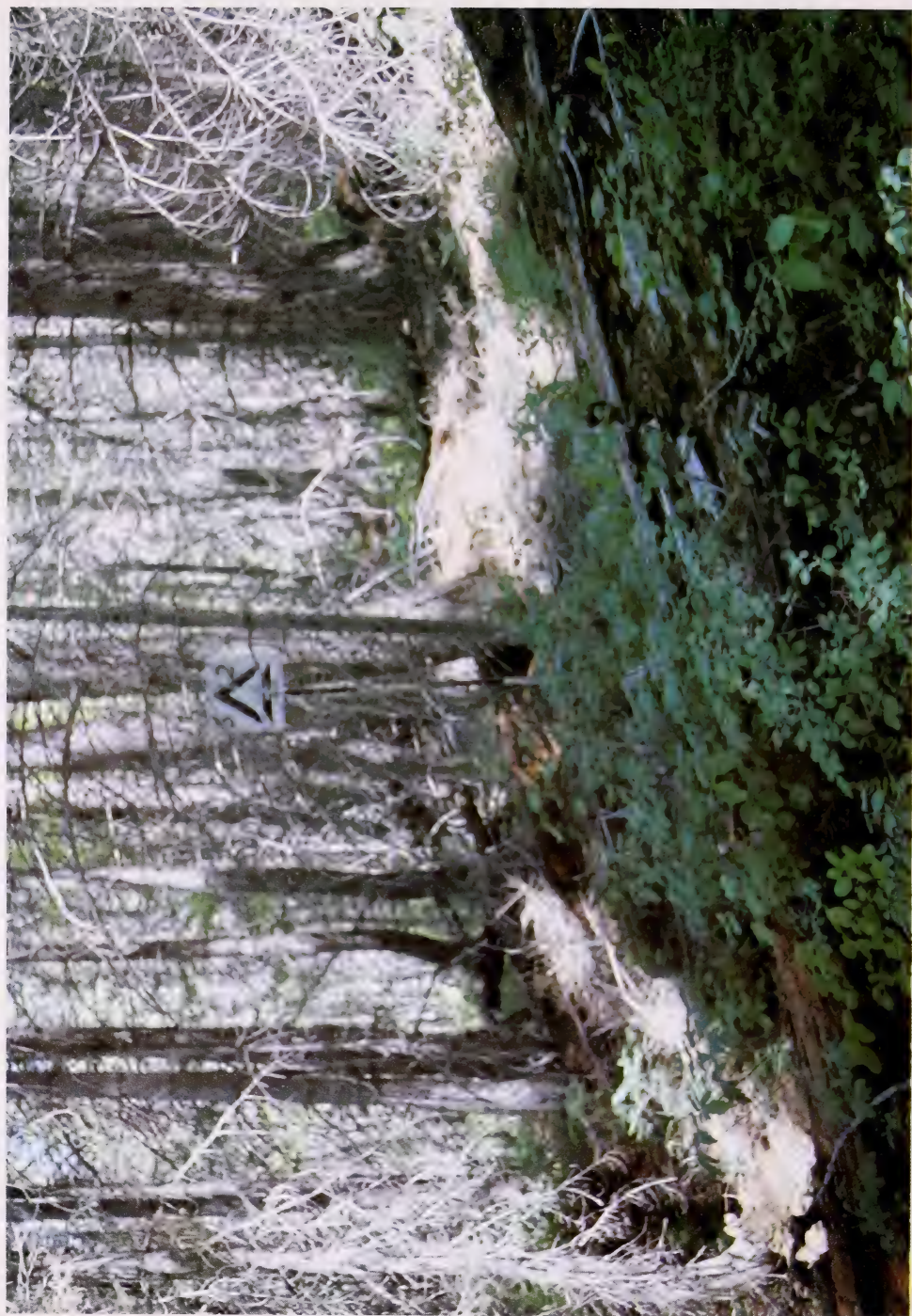
FOREST COVER TYPE: SAF NO.
MONTANA HABITAT TYPE: NO.

206
670

Stand No.
51

Engelmann spruce - subalpine fir
Subalpine fir/beargrass-huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac	Average duff depth: 3.2 in 8.13 cm		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.5	Average diameter, 3 + fuels: 6.6 in		Rate of Spread: medium	
0.25-1	2.7	16.76 cm		Intensity: medium	
1-3	4.1	Percent rotten, 3 + fuels: 33 %		Torching: medium	
Subtotal 0-3	7.3	Volume of sound 3 + fuels: 2250 ft ³ /ac 157.4 m ³ /ha		Crowning: low	
3-6	5.8	STAND AND SITE DATA		Resistance to control: medium	
6-10	18.6	Age of overstory dominants: 210 yrs		Overall Fire Potential MEDIUM	
10-20	14.7	ABLA 130 yrs		STAND LOCATION	
20+	2.9	Average slope: 70 %		National Forest: Lolo	
SUBTOTAL 3+	42.0	Aspect: northeast		Ranger District: Missoula	
TOTAL	49.3	Elevation: 5750 ft 1753 m		Drainage: Gilbert Cr.	
NFORS FUEL MODEL		STYLIZED FUEL MODEL		Photo taken: 7/6/77	
G		10		By: W. C. Fischer	
		Fire Ecology Group Eight			



DATA SHEET

FOREST COVER TYPE: SAF NO.

206

Stand No.

62

Engelmann spruce - subalpine fir

Subalpine fir/sweetscented bedstraw (ABLA/GATR)

MONTANA HABITAT TYPE: NO.

630

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:		Based on an average bad day:	
			4.1	in	85-90° temp., 15-20% R.H., 10-15	
			10.41	cm	mi/h wind, 4 weeks since rain	
0-0.25	0.7	0.16	Average diameter, 3 + fuels:		Rate of Spread: medium	
0.25-1	1.6	0.36	10.1 in		Intensity: medium	
1-3	1.3	0.29	25.65 cm		Torching: medium	
			Percent rotten, 3 + fuels: 97 %		Crowning: medium	
			Volume of sound 3 + fuels:		Resistance to control: high	
Subtotal	3.6	0.81	122 ft ³ /ac		Overall Fire Potential MEDIUM	
			8.5 m ³ /ha			
STAND AND SITE DATA			STAND LOCATION			
Age of overstory dominants: 65 yrs			National Forest: Lolo			
PICEA			Ranger District: Missoula			
PSME 60 yrs			Drainage: Rattlesnake Cr.			
LAOC 55 yrs						
ABLA 44 yrs						
SUBTOTAL 3+ 47.0 10.54						
TOTAL 50.6 11.35						
NFDPS FUEL MODEL		STYLIZED FUEL MODEL	Photo taken: 7/13/77			
G		10	By: W. C. Fischer			
			Fire Ecology Group Nine			



DATA SHEET

Stand No. 12

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO. 670 Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth: 3.0 in 7.62 cm			Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0-0.25	2.2	0.49	Average diameter, 3 + fuels: 4.6 in			Rate of Spread: high		
0.25-1	4.3	0.96	Percent rotten, 3 + fuels: 11.68 cm			Intensity: high		
1-3	14.1	3.16	Volume of sound 3 + fuels: 32 %			Torching: high		
Subtotal 0-3	20.6	4.61	1658 ft ³ /ac			Crowning: medium		
3-6	16.2	3.63	116.0 m ³ /ha			Resistance to control: high		
6-10	7.5	1.68	STAND AND SITE DATA					
10-20	6.7	1.50	Age of overstory dominants: 75 yrs					
20+	0	0	LAOC					
SUBTOTAL 3+	30.4	6.81	ABLA 75 yrs					
TOTAL	51.0	11.42	PICEA 65 yrs					
NFDRS FUEL MODEL			Average slope: 40 %					
STYLIZED FUEL MODEL			Aspect: north					
J			Elevation: 5600 ft 1707 m					
12			Remarks: old thinning slash					
			Fire Ecology Group Nine					
			National Forest: Lolo					
			Ranger District: Missoula					
			Drainage: Cloudburst Cr.					
			Photo taken: 9/21/76					
			By: W. C. Fischer					



DATA SHEET

FOREST COVER TYPE: SAF NO. 206 **Stand No.** 20A
MONTANA HABITAT TYPE: NO. 691 Engelmann spruce - subalpine fir
Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²				
0-0.25	0.5	0.11	Average duff depth: <u>3.4</u> in <u>8.64</u> cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.25-1	1.4	0.31	Average diameter, 3+ fuels: <u>4.9</u> in <u>12.45</u> cm		Rate of Spread: <u>high</u> Intensity: <u>high</u> Torching: <u>high</u> Crowning: <u>medium</u>	
1-3	3.8	0.85	Percent rotten, 3+ fuels: <u>37</u> %		Resistance to control: <u>high</u>	
Subtotal 0-3	5.7	1.27	Volume of sound 3+ fuels: <u>2273</u> ft ³ /ac <u>159.0</u> m ³ /ha		Overall Fire Potential <u>HIGH</u>	
			STAND AND SITE DATA		STAND LOCATION	
3-6	16.7	3.74	Age of overstory dominants: <u>165</u> yrs PICEA		National Forest: <u>Helena</u>	
6-10	22.0	4.93	PIAL <u>140</u> yrs		Ranger District: <u>Lincoln</u>	
10-20	6.6	1.48			Drainage: <u>Cooper Cr.</u>	
20+	0	0				
SUBTOTAL 3+	45.3	10.15				
TOTAL	51.0	11.42	Average slope: <u>7</u> % Aspect: <u>northwest</u> Elevation: <u>6160</u> ft <u>1878</u> m		Photo taken: <u>7/21/78</u> By: <u>W. C. Fischer</u>	
NFDRS FUEL MODEL		STYLIZED FUEL MODEL	Remarks: <u>Fire Ecology Group Eight</u>			
G		10				



DATA SHEET

Stand No. 94
 FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir
 MONTANA HABITAT TYPE: NO. 661 Subalpine fir/twinflower-twinflower phase (ABLA/LIBO-LIBO)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth: 2.7 in 6.68 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mph wind, 4 weeks since rain		
0-0.25	0.5 0.11	Average diameter, 3+fuels: 6.4 in	Rate of Spread: Low		
0.25-1	1.6 0.36	16.26 cm	Intensity: medium		
1-3	2.2 0.49	Percent rotten, 3+fuels: 55 %	Torching: medium		
Subtotal 0-3	4.3 0.96	Volume of sound 3+fuels: 1700 ft ³ /ac 119.0 m ³ /ha	Crowning: medium		
3-6	8.5 1.91	Resistance to control: medium			
6-10	30.3 6.79	Overall Fire Potential MEDIUM			
10-20	7.9 1.77	STAND LOCATION			
20+	0 0	National Forest: Lolo			
SUBTOTAL 3+	46.7 10.47	Ranger District: Missoula			
TOTAL	51.0 11.43	Drainage: Gillispie Cr.			
NFDRS FUEL MODEL	G	Photo taken: 6/13/78			
STYLIZED FUEL MODEL	10	By: W. C. Fischer			



DATA SHEET

Stand No. 10

FOREST COVER TYPE: SAF NO. 206

Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO. 670

Subalpine fir/menziesia phase (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	1.1	0.25	2.7 in	Rate of Spread: medium	
0.25-1	3.2	0.72	6.86 cm	Intensity: medium	
1-3	2.2	0.49	6.0 in	Torching: medium	
			15.24 cm	Crowning: medium	
Subtotal 0-3	6.5	1.46	18 %	Resistance to control: medium	
			3499 ft ³ /ac	Overall Fire Potential MEDIUM	
			244.8 m ³ /ha		
STAND AND SITE DATA			STAND LOCATION		
Age of overstory dominants: 90 yrs			National Forest: Lolo		
PICEA			Ranger District: Missoula		
ABLA			Drainage: Cloudburst Cr.		
80 yrs					
Average slope: 15 %			Photo taken: 9/21/76		
Aspect: northeast			By: W. C. Fischer		
Elevation: 5880 ft					
Remarks: Fire Ecology Group Nine					
SUBTOTAL 3+		53.0	11.88		
TOTAL		59.5	13.34		
NFDRS FUEL MODEL		STYLIZED FUEL MODEL			
G		10			



DATA SHEET

Stand No. 52

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO. 670 Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²				
0-0.25	0.5	0.11	Average duff depth: 2.9 in 7.37 cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.25-1	2.8	0.63	Average diameter, 3 + fuels: 7.8 in		Rate of Spread: Low	
1-3	2.6	0.58	Percent rotten, 3 + fuels: 17 %		Intensity: Low	
			Volume of sound 3 + fuels: 3785 ft ³ /ac 264.8 m ³ /ha		Torching: Low	
Subtotal 0-3	5.9	1.32			Crowning: Low	
3-6	4.5	1.01			Resistance to control: Low	
6-10	16.3	3.65			Overall Fire Potential LOW	
10-20	32.8	7.35				
20+	3.3	0.74				
SUBTOTAL 3+	56.9	12.75				
TOTAL	62.8	14.07				
NFDRS FUEL MODEL			STAND AND SITE DATA		STAND LOCATION	
			Age of overstory dominants: 175 yrs PICEA		National Forest: Lolo	
			ABLA 140 yrs		Ranger District: Missoula	
					Drainage: Gilbert Cr.	
			Average slope: 50 %		Photo taken: 7/6/77	
			Aspect: northeast		By: W. C. Fischer	
			Elevation: 5860 ft 1786 m			
			Remarks: Fire Ecology Group Nine			
G			10			



DATA SHEET

Stand No. 3

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO. 625 Subalpine fir/queencup beadlily-menziessia phase (ABLA/CLUN-MEFE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²				
0-0.25	0.4	0.09	Average duff depth: <u>4.5</u> in <u>11.43</u> cm		Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.25-1	0.9	0.20	Average diameter, 3+ fuels: <u>10.1</u> in		Rate of Spread: <u>Low</u>	
1-3	0.5	0.11	<u>25.65</u> cm		Intensity: <u>medium</u>	
			Percent rotten, 3+ fuels: <u>49</u> %		Torching: <u>Low</u>	
			Volume of sound 3+ fuels: <u>2906</u> ft ³ /ac <u>203.3</u> m ³ /ha		Crowning: <u>Low</u>	
Subtotal 0-3	1.8	0.40			Resistance to control: <u>Low</u>	
3-6	2.7	0.61			Overall Fire Potential <u>LOW</u>	
6-10	7.7	1.73				
10-20	57.1	12.80				
20+	3.3	0.74				
SUBTOTAL 3+	70.8	15.88				
TOTAL	72.6	16.28				
NFDRS FUEL MODEL			STYLIZED FUEL MODEL		STAND LOCATION	
					National Forest: <u>Lolo</u>	
					Ranger District: <u>Missoula</u>	
					Drainage: <u>Lost Park Cr.</u>	
					Photo taken: <u>9/15/76</u>	
					By: <u>S. Cox</u>	
G			10		Fire Ecology Group Nine	



DATA SHEET

Stand No. 38

FOREST COVER TYPE: SAF NO. 206 Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO. 691 Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	2.9 in 7.37 cm	Based on an average bad day: 85-90 ° temp., 15-20% RH., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.2	0.04	Average diameter, 3 + fuels:	6.1 in	Rate of Spread:	medium
0.25-1	1.4	0.31			Intensity:	high
1-3	5.0	1.12	Percent rotten, 3 + fuels:	17 %	Torching:	medium
			Volume of sound 3 + fuels:	4708 ft ³ /ac 329.4 m ³ /ha	Crowning:	medium
Subtotal 0-3	6.6	1.47				
3-6	11.8	2.65				
6-10	47.1	10.56				
10-20	11.8	2.65				
20 +	0	0				
SUBTOTAL 3 +	70.7	15.86				
TOTAL	77.3	17.33				
NFDRS FUEL MODEL			STAND AND SITE DATA			
STYLIZED FUEL MODEL			Age of overstory dominants: 200 yrs			
			PICEA			
			ABLA 170 yrs			
			PICO 117 yrs			
			Average slope: 10 %			
			Aspect: east			
			Elevation: 6380 ft 1945 m			
			Remarks: Fire Ecology Group Eight			
C			10			
			National Forest: Lolo			
			Ranger District: Missoula			
			Drainage: Gilbert Cr.			
			Photo taken: 6/23/77			
			By: W. C. Fischer			
			Overall Fire Potential HIGH			
			STAND LOCATION			

Fischer, William C.

1981. Photo guide for appraising downed woody fuels in Montana forests: lodgepole pine and Engelmann spruce - subalpine fir cover types. USDA For. Serv. Gen. Tech. Rep. INT-98, 143 p. Intermt. For. and Range Exp. Stn., Ogden, Utah 84401.

Two series of color photographs show different levels of downed woody material resulting from natural processes in two forest cover types in Montana. Each photo is supplemented by fuel inventory data and potential fire behavior ratings.

KEYWORDS: forest fuels, fire behavior, fire hazard, fuel appraisal

The Intermountain Station, headquartered in Ogden, Utah, is one of eight regional experiment stations charged with providing scientific knowledge to help resource managers meet human needs and protect forest and range ecosystems.

The Intermountain Station includes the States of Montana, Idaho, Utah, Nevada, and western Wyoming. About 231 million acres, or 85 percent, of the land area in the Station territory are classified as forest and rangeland. These lands include grasslands, deserts, shrublands, alpine areas, and well-stocked forests. They supply fiber for forest industries; minerals for energy and industrial development; and water for domestic and industrial consumption. They also provide recreation opportunities for millions of visitors each year.

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